

ECONOMIC ANALYSIS ONE - WAY COUPLET



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ECONOMIC ANALYSIS OF THE ONE-WAY COUPLET

HELENA, MONTANA

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For

MONTANA STATE HIGHWAY COMMISSION

PLANNING SURVEY SECTION

In Cooperation With

U.S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

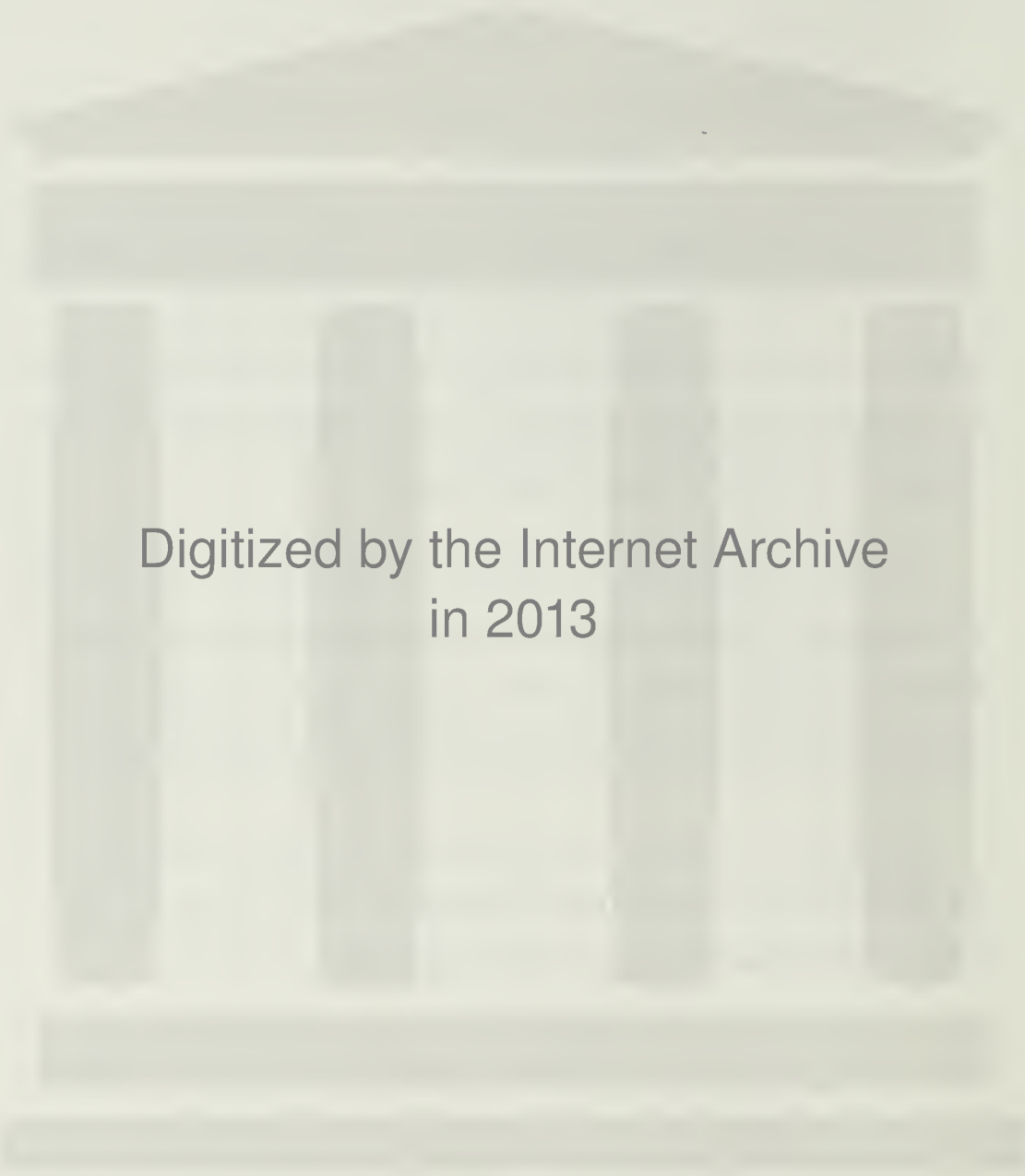
BUREAU OF PUBLIC ROADS

Acknowledgment.

It is a rarity that a project such as this can be accomplished without the help, cooperation and participation of others. Thus, Carroll College is sincerely grateful for the inspiration, advice and splendid cooperation received from the Montana State Highway Commission and the Bureau of Public Roads.

Not to be overlooked is patient and fruitful aid provided by the other State and Municipal Agencies--particularly the County Assessor's Office which helped the project team to obtain and develop land and property valuation data for the couplet area.

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PREFACE

Unlike banks or schools, one-way couplets have not become so institutionalized on the American scene that they do not require some further study and evaluation to justify increasing adoption when and where needs arise in urban centers.

Should a widened two-way artery for US 12 have been built instead of conversion to the one-way couplet in Helena, Montana? This basic question precipitated the need and practicability of an economic analysis of the one-way system. Thus, the couplet pragmatically lent itself for such an evaluation in consideration of prospective highway facilities and improvements as associated with urban planning and development of smaller but growth oriented communities.

The Department of Economics of Carroll College was engaged by the Montana State Highway Commission in cooperation with the Bureau of Public Roads to undertake such a study of the one-way system already functioning in the city of Helena, Montana within a few miles of Carroll College.

The objective and purpose of the study was to assess the impact of the couplet on the development of the adjacent area in terms of commercial application, land use and valuation, traffic patterns and growth, and other pertinent economic and social indicators.

A ten month investigation beginning June, 1966 was authorized which would be concluded with a final report to the Montana State Highway Commission.

SUMMARY AND CONCLUSIONS

Within the limits of practicability, this study was conducted on the basis of the "before and after" approach as it pertains to the construction of Prospect Avenue which became the westbound leg of the one-way couplet. Construction began on Prospect Avenue in the fall of 1960 and the couplet was opened to traffic about July 1, 1962.

Since Montana does not have a sales tax it was inappropriate to attempt to evaluate gross sales in the couplet area. Instead, other direct and positive economic indicators were used to assess the economic impact that the couplet has had upon the surrounding property. These economic indicators were as follows:

1. Changes in land use.
2. Land and property valuations.
3. Building permits and valuation.
4. Number and type of business enterprises.
5. Employment statistics.

In addition to the economic indicators listed above, traffic volumes were compared and an attempt was made to evaluate traffic accident experience in the before and after periods. A survey of the business enterprises and residents in the couplet area was also conducted to determine prevailing attitudes toward the one-way system.

The findings and conclusions of this study are summarized as follows:

1. The predominant land use of the abutting property to the couplet has changed from residential and public or semipublic in 1959 to an almost

exclusive commercial usage in 1965.

2. Assessed valuation of abutting properties have increased over eight times in the period from 1959 - 1966, compared to an increase of approximately four times for nonabutting properties in the same area.

3. Building permits in the "after period" of 1960-1965 totaled over two million dollars on approximately 100 acres of the couplet's abutting property. This total compares to approximately 28 million dollars in building permits issued in the same period for the total nine square mile area of the City of Helena.

4. Forty-five additional business establishments located on the couplet's abutting property in the "after period" from 1960-1965.

5. Approximately 40 percent of the 58 proprietors or managers of businesses located on the one-way couplet indicated that growth potential and heavy traffic volumes influenced their decision to locate on the couplet.

6. Only 8 of the 58 businessmen that were interviewed indicated that they would prefer two-way operation of 11th Avenue rather than the present one-way couplet.

7. The average daily traffic on 11th Avenue in 1960, prior to one-way operation, was 5,970 vehicles. In 1966, total average daily traffic on the one-way couplet was 11,165 vehicles, or an increase of 87 percent in the six year period. There was an increase of only 39 percent during the same period at a permanent counter located on Montana Avenue (US 12 Bypass) near the western terminus of the couplet.

8. Traffic accident data in the "before period" were not available for comparison but the average rate for all accidents per 10 million vehicle miles in the "after period" from 1962 to 1965 was approximately 70 for

11th Avenue and 71 for Prospect Avenue. These rates are comparable to a rate of 144 computed for the major street system in Great Falls for the three-year period of 1960-1962.

9. The one-way operation of the couplet was favored by most businessmen and residents of the couplet area.

INTRODUCTION

1. Orientation

The economic analysis of the 11th Avenue-Prospect Avenue one-way couplet located in Helena, Montana has been made in an effort to determine the benefits that can accrue to a neighborhood by the somewhat controversial operation of one-way streets.

The principles and logistics of the one-way couplet have, within recent years, come to be applied on an increasing scale in many of the large cities of the nation. However, in many of the smaller but growth-centered cities and towns which are experiencing the aggravations and diseconomies of traffic congestion, full utilization of the one-way system has not materialized. In many instances there still exists resistance and indifference to implementation of couplet techniques thereby resulting in retardation of transportation progress and costly misapplication of highway investment, e.g. where a decision is made to widen an existing two-way artery to relieve traffic congestion in a downtown business-commercial area but where conversion to a one-way system would be the logical solution. Why do such attitudes and inertia prevail in this modern age of space technology where transportation problems are being resolved for extra terrestrial destinations?

One consideration might be, that the feasibility and gross economy of converting to a one-way couplet are too plausible to accept as facts without proof. It has always been traditional to regard highway improvement objects in light of expensive investment outlays since the cost of production of social goods such as highways, bridges, dams, etc. has

always been expensive. It, therefore, might be a natural tendency to regard couplet developments affording economical and expedient solutions to highway problems with uncertainty and suspicion.

It does appear, however, that the one-way couplet approach is an exception to the traditional generalization concerning the high cost of investment of social goods. However, like any other capital investment the couplet as one manifestation of highway improvement must be evaluated within the framework of "cost-benefits" analysis. Thus, actual net quantitative and qualitative benefits are to permeate society before any highway investment can be justified.

HISTORY AND TRANSITION OF HELENA, MONTANA

The site of Helena, the Capital of Montana, was discovered in the spring of 1864 by the Cowan party of prospectors which are often referred to as the "Four Georgians". After cursory prospecting along a creek in a gulch area which was later to become the City of Helena, John Cowan, John Crab, D. J. Miller and Reginald Stanley moved northward to prospect in the vicinities of the Dearborn, Teton, and Sun rivers where nothing worthy of further development was discovered. Faced with the reality of a short summer the miners decided to take one last chance and return to the former gulch they had prospected in the spring. This gulch they appropriately named Last Chance ² and it was destined to become the main street of the Capital City of Montana as shown in photos 2 and 3. Historical accounts indicate that on the evening of July 15, 1864, within a few hundred feet of what is now the site of the Montana Club in downtown Helena, two shallow penetrations on each side of the creek yielded gold nuggets the weight of a half dollar. Report of this rich gold discovery spread like wildfire and it was not long before miners came to the area in great numbers. By March 1865 the population of the area amounted to several thousand and the mining district began to develop into a prosperous city. Bridge Street which was later changed to State Street became the center of commercial activity as shown in photo 6.

The naming of the city of Helena, although controversial, was primarily attributed to John Sommerville who proposed the name after his home town of Helena, Scott county, Minnesota in a meeting of miners on October 30, 1864. ³



Photo 1. The discovery of Gold
by the "Four Georgians"



Photo 2. Last Chance Gulch 1966
(corner of 6th Avenue)



Photo 3. Last Chance Gulch
street sign



Photo 4. Montana Club near site of
gold discovery



Photo 5. Bronze plaque on wall of
Montana Club near site of gold dis-
covery in Helena, Montana
(corner of 6th Ave. and Fuller)



Photo 6 Bridge Street (now State St.)
- earliest center of commercial activity
in Helena, Montana, 1865



Photo 7. Artists panorama of Helena,
Montana in 1865

Semblance of an organized urban community was evident by 1865 as shown in photo 7. The city continued to grow both up and down the gulch and along the hillsides as additional wealth poured in from other surrounding gulch areas such as Silver Creek, Greenhorn, Blue Cloud, Prickly Pear and Clancy. On February 22, 1881 the city finally became incorporated.⁴ A panoramic view of the city in 1888 is shown in photo 9.

In 1890 Helena had a population of 13,834 and opposed the city of Anaconda with a population of 3,975 in an election for the determination of the permanent state capitol. In the final election of 1894 Helena won by a small majority of votes and became assured of the economic by-products of political activity which gave the city more stability during reverse business periods when other cities of Montana were more drastically affected. In the decade from 1890 to 1900 the city boasted that it already had fifty millionaires.⁵ It was estimated that over 20 million dollars of gold had been mined in the Last Chance Gulch, and the total mined in all the gulch areas of the Helena region was estimated to be 135 million dollars.⁶ All this wealth gave Helena the claim as the richest city for its size in the United States. The apogee of Helena's plush era was evidenced by its numerous mansions, public buildings, business blocks, 23 miles of electric street railways, water works, education institutions and recreation centers.⁷ The railroads had reached Helena in 1883 and before the turn of the century the "Queen City of the Rockies" was the railroad center of Montana and was also regarded as the hub of commerce, industry and finance of the northern Rocky Mountain region.



Photo 8. Helena mansion of 1870



Photo 9. View of Helena in 1888



Photo 10. Helena Mansion in 1887



Photo 11. Electric street railway
in Helena in the 1890's

Between 1900 and 1910 Helena experienced another era of prosperity after the completion of the Canyon Ferry, Hauser and Holter dams on the Missouri River, (refer to photos 12 and 13) which fed electric power to the mining industries in Butte and Anaconda.⁸ The famous and extravagant Broadwater Hotel and its Natatorium, which were first opened to the public in 1889, were expanded to accommodate more of the local elite and out-of-state dignitaries (refer to photos 14, 15). The capitol building was finally completed around the turn of the century and was located in the relatively isolated east side section of the town as shown in photo 16.

The World War I period was also characteristic of a prosperous and industrious Helena (refer to photo 17). A clipping from the Helena Independent of January 17, 1918 showed a compilation of numerous enterprises operating in the city. The listing identified 30 manufacturing concerns, 19 manufacturers and wholesalers, 35 wholesalers and distributors, numerous manufacturers' agents and representatives, 20 federal offices, railroad offices, and district and divisional offices of insurance companies.⁹

A view of Helena prior to the Great Depression is shown in photo 18. Although Helena succumbed to the depression, it was not as adversely affected as other cities of Montana such as Butte and Anaconda. As the capital and seat of state government and having numerous offices of the federal government, both employment income and expenditure sustained a significant portion of the local economy.¹⁰

After the second World War, however, Helena's modest post war building boom could not compare with the progress of Great Falls, Missoula, or Billings but as the political center of the State, Helena's economic stability was established.¹¹



Photo 12. Hauser Dam in 1907

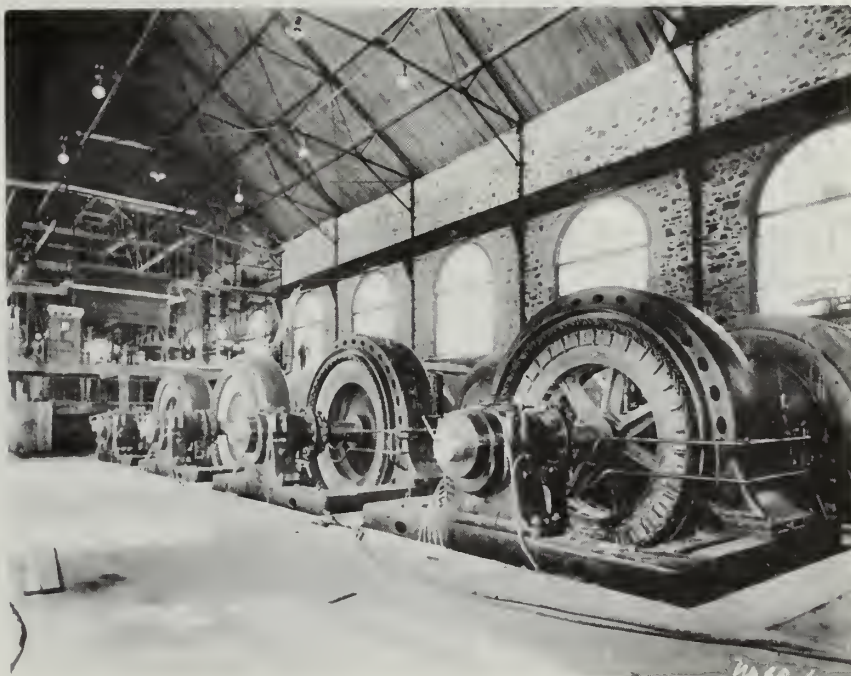


Photo 13. Hydro-electric plant of
Hauser Dam



Photo 14. The Broadwater Hotel and
Natatorium at the turn of the century



BROADWATER HOTEL AND NATATORIUM, HELENA, MONTANA

Photo 15. Broadwater Hotel and grounds



Photo 16. The Capitol Building in 1903



Photo 17. View of Helena during World War I



Photo 18. Helena prior to the Great Depression

THE NATURE AND CHARACTERISTICS OF THE ONE-WAY COUPLET

1. Definition and Characteristics

Essentially, the one-way couplet has been defined as "a pair of one-way streets on which traffic moving in one direction is normally separated from that in the opposite direction on the other street by one city block."

By definition, then, the one-way couplet can be regarded as an urban planned traffic system that usually involves a minimum separation of one city block between streets carrying opposing traffic volumes. Thus, two opposing one-way traffic volumes in which the separation is provided by a narrow median cannot be considered a one-way couplet. Nor is a freeway where opposing traffic lanes are separated by a land median within the definition of a one-way couplet.

Notwithstanding the fact that most couplets are designed on the basis of the one-city-block separation between the opposing one-way traffic routes, there are also one-way couplet versions that include multi-block separation between the major one-way arteries. Examples of such would include the routing of US 99 through the city of Medford, Oregon and that of US 40 through the city of Sacramento, California. In these systems the intermediate streets, which are usually designed for two-way traffic flow, are regarded as collector streets that provide for movement of traffic between the major arteries of the one-way couplet and the local streets. Collector streets also serve to provide access to the abutting properties.

The outstanding application of the one-way couplet system is found in a number of large cities where traffic congestion became so intense in large sections of the central business district that relief via the couplet principle was the only practical solution. Here, the one-way system was instituted en masse over a large area of the traffic congested district resulting in what is termed as a "one-way grid." Since all streets within the affected area serve equally as major routes, and not merely as collector streets, all the couplets conform to the criteria of the definition of the one-way couplet. The downtown area of Portland, Oregon and Manhattan Island of New York City are excellent examples of the one-way grid design.

Where traffic congestion is manifest periodically, as in the case of rush hours, relief is effected in some cities by converting two-way street traffic flow to alternate one-way routing during those hours. Here, the principle of the one-way couplet is applied on an interim basis in phase with peak periods of traffic congestion.

Other quasi-couplets developments include wide, two-way avenues coupled with one-way streets where the direction of flow of traffic of the street separated by one block from the avenue is opposite to that of the avenue.

2. Purposes and Advantages

A better understanding and appreciation of the one-way couplet can be had, perhaps, if such a traffic system is examined and evaluated in light of practical application and economic utility.

Basically, the one-way couplet is a highly effective and inexpensive way for nullifying excess traffic friction while at the same time

maximizing street capacity in traffic congested areas of cities. Conversion to the couplet system is effected particularly in saturated business districts where vehicular and pedestrian traffic are at a peak and constantly in conflict. From an economic standpoint, the relief afforded by the couplet consists in optimum utilization of costly fixed and variable resources. Thus, building frontage, trucks, machinery, etc. are used more efficiently as things get done sooner because of the absence of traffic congestion. Shipments and deliveries become more expeditious and machine waiting time is reduced if not eliminated. People get to work on time and accomplish their tasks and responsibilities without the waste of time. From another standpoint, the resulting decrease in transport and transit time alone will correspondingly allow for increase in traffic volume with its attendant economic impact on the community. The need to widen streets and traffic arteries to accommodate this same volume increase in traffic for two-way operation is obviated. In highly developed business centers the costs of such street widening are staggering if not prohibitive. In a reference to the Highway Capacity Manual, Smith and Hurd stated in their work, Traffic Engineering that:

. . . a 40-ft downtown street on which parking is prohibited is capable of passing 3,400 vph (vehicles per hour) with one-way traffic, while with two-way traffic evenly divided (directionwise), only 2,800 vph can be accommodated. For similar conditions in intermediate areas, the one-way street¹³ will handle 2,950 vph while the two-way street handles 2,650.

The authors cite other study areas in which average volume increases ranged from 44 to 200 per cent as a result of implementation of one-way operation under proper traffic control conditions, e.g. prohibition of curb parking, etc.¹⁴

The city of Portland, Oregon experienced dramatic results, including an estimated \$540,000 annual savings in accident costs, when it made a \$55,900 investment to convert 280 city blocks comprising more than 21 miles of streets into a one-way grid in 1950. It was reported that from 5 to 105 per cent greater volume of traffic was handled with an increase in average speed from 5.55 mph to 14.2 mph while delays were reduced from 79.73 seconds per trip to 7.25 seconds.¹⁵

A 1953 study entitled, The One Way Street, by John Kelly, concerning the analysis of the Sacramento, California couplet, showed that the introduction of one-way streets resulted in a 14 per cent increase in traffic volume with a 24.4 per cent increase in speed in peak hours and 41.4 per cent for other hours. The study concluded that popular acceptance of the couplet was based on the following factors:¹⁶

(1) substantial reduction in vehicle and pedestrian accidents; (2) increased traffic carrying capacity on the one-way streets; (3) relatively inexpensive cost of converting streets from two-way to one-way traffic.¹⁷

Several conversions to the one-way couplet have already been made on a selective basis for the city of Great Falls, Montana. In an urban transportation study of that city conducted by the Montana State Highway Commission in cooperation with the Bureau of Public Roads, conversion to one-way couplets in projected areas of traffic congestion was proposed. These determinations were based on computer predictions of growth factors affecting that city by the year 1981, two decades from the beginning of the study. Thus, a 53 per cent increase in population or an addition of 39,300 persons, from the base year of 1961, would be anticipated and they would require 13,000 additional dwelling units. An 82 per cent

increase in passenger cars in the 20 year period would make travel virtually impossible under current street conditions in that city unless selective conversion to one-way couplets would be made in phase with appropriate volumes of traffic build-up. Typical forward planning capitalizing on the low-cost high-utility attributes of the one-way couplet can be fathomed from this comprehensive study.

In an Oregon study it was determined that as a result of conversion to one-way couplets in a number of cities of that state, travel time reductions ranged from 5.8 to 39.9 per cent with corresponding savings in time from 0.1 to 1.5 minutes.¹⁹ The report stated:

. . . The one-way couplet, therefore, offers a means of reducing travel time of traffic because under one-way operation conflicts between opposing streams of traffic are eliminated, traffic signals operate more efficiently, delay arising from turning movements is reduced and motorists are able to pass slower moving vehicles on streets otherwise too congested for passing maneuvers.²⁰

The above report also concluded that the accident rate will normally decline after a one-way couplet is established.

Other advantages to be gained from conversion to and operation of one-way couplets would include: possible reduction of parking restrictions, inexpensive, controlled routing of traffic, more feasible operation of transit services and economies in vehicular operation.

3. Derivation of the One-Way Couplet Principle

It would be natural for nonexperts in transportation and traffic engineering to consider the one-way couplet as a modern outgrowth and development of urbanization and its associated problems including traffic congestion. Actually, the concept and application of the one-way system stems from antiquity as one authority brought out:

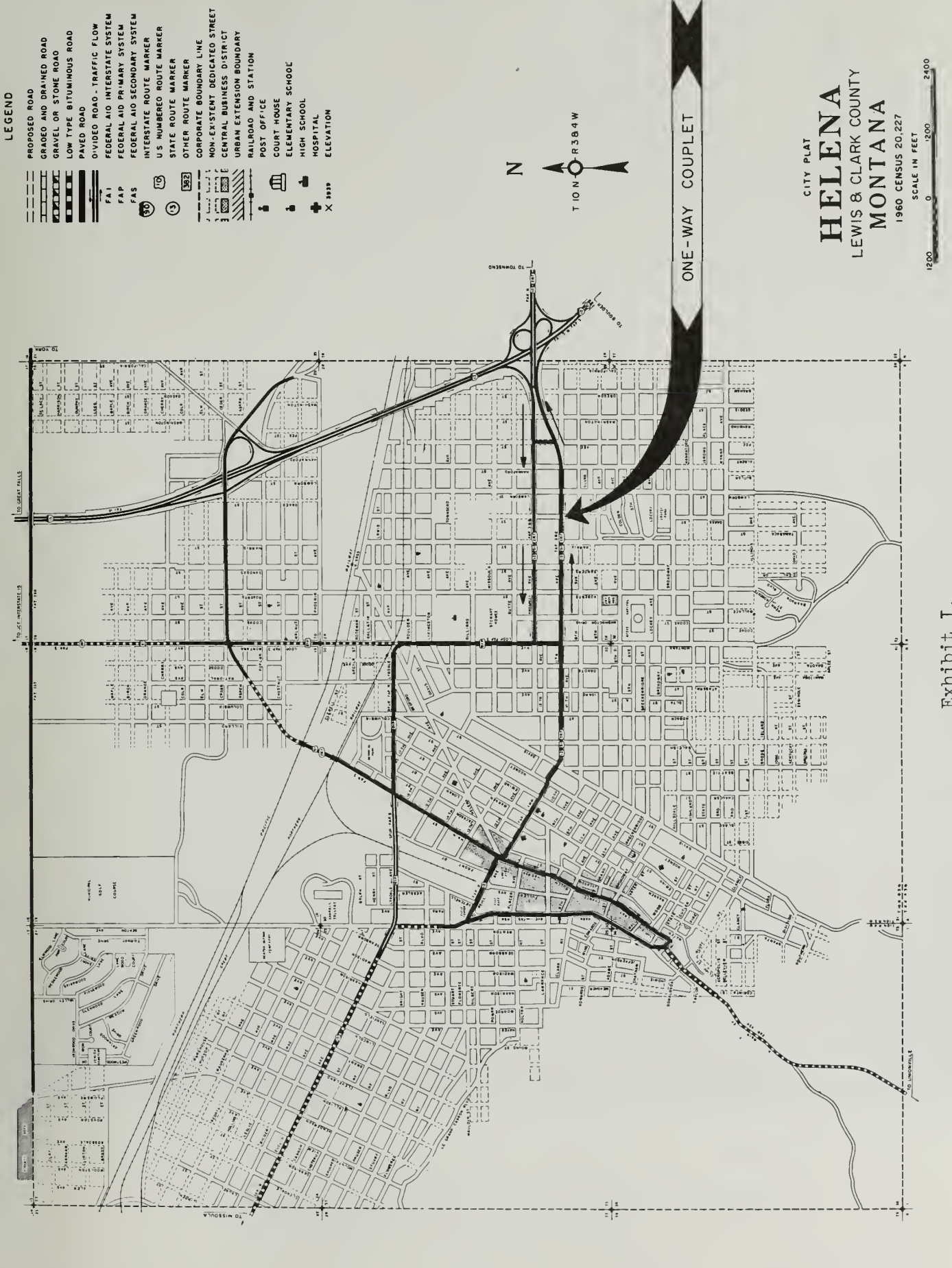
. . . The earliest evidence of its existence is shown by bas-reliefs of chariots in Pompeii pointing the directions in which vehicles had to move on streets where roadways were wide enough for only one line of vehicles. The Pompeians were apparently more alive to traffic requirements than we are today, for until recently, in many cities and in some of them even now, vehicles are allowed to move in either direction though there may be a roadway width for only one line of vehicles at a time.²¹

In America, in 1906, the first one-way operation went into effect on Chestnut Street in Philadelphia. The following year several one-way streets were instituted in New York City's downtown Park Row area and in 1908, the system was introduced in Boston. Full application in congested business districts of large cities did not come into being until the early 1920's.²²

In foreign countries, the one-way system was applied in Paris in the summer of 1909 and in Buenos Aires in 1910.

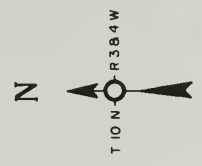
In recent decades, however, one-way couplet systems have come into increasing use as a result of paralyzing traffic congestion in growth-oriented urban centers. Here, the couplet has allowed for an immediate economical solution of a major problem.

In urban planning and development, as associated with the engineering and production of major intrastate and interstate highway links, the one-way couplet has offered an interim solution to traffic congestion during the period in which the connecting highway was being built. This has now become a modern planning approach where prior to construction and completion of a freeway link to an urban center, conversion to a one-way system is made to absorb the increasing volume of traffic to be ultimately relieved by the freeway itself.



LEGEND

- PROPOSED ROAD
- GRAVEL AND DRAINED ROAD
- GRAVEL OR STONE ROAD
- LOW TYPE BITUMINOUS ROAD
- PAVED ROAD
- DIVIDED ROAD - TRAFFIC FLOW
- FEDERAL AID INTERSTATE SYSTEM
- FEDERAL AID PRIMARY SYSTEM
- FEDERAL AID SECONDARY SYSTEM
- INTERSTATE ROUTE MARKER
- U.S. NUMBERED ROUTE MARKER
- STATE ROUTE MARKER
- OTHER ROUTE MARKER
- CORPORATE BOUNDARY LINE
- NON-EXISTENT DEDICATED STREET
- CENTRAL BUSINESS DISTRICT
- URBAN EXTENSION BOUNDARY
- RAILROAD AND STATION
- POST OFFICE
- COURT HOUSE
- ELEMENTARY SCHOOL
- HIGH SCHOOL
- HOSPITAL
- ELEVATION



ONE-WAY COUPLET

CITY PLAT
HELENA
LEWIS & CLARK COUNTY
MONTANA
1960 CENSUS 20,227

Exhibit I.

ANALYSIS OF THE 11TH AND PROSPECT ONE-WAY
COUPLET, HELENA, MONTANA

1. Description and Location

The 11th Avenue-Prospect Avenue Couplet, which is the object of this study, conforms to the general description of the one-way couplet as discussed before. As indicated in Exhibit 1, the couplet is located in the eastern portion of Helena between Montana Avenue and the I 15 Capitol Interchange which are its termini. The couplet itself is a bifurcation of route US 12 where Prospect Avenue forms the westbound one-way artery while 11th Avenue serves as the eastbound one-way route. It will be seen that these opposing one-way streets are separated by a distance of one block whereby the characteristic center island strip is formed. The average length of the couplet is a little over 1 mile which can be broken down as follows:

Length of Prospect Avenue	0.994 miles
Length of 11th Avenue	<u>1.010</u> miles
Average Length	1.002 miles

From a topographical standpoint, 11th Avenue is about 15 feet more elevated than Prospect but this difference disappears where both streets converge in the vicinity of Oregon Street where the Interchange develops. Photo 19 is a westward aerial view of the couplet with the central business district of the city of Helena in the background. The converging one-way streets (11th Avenue on the left and Prospect on the right) and the development of the interchange can be seen in the foreground. Photo 20 shows the development of the one-way couplet and the I 15-Capitol Interchange in more detail. This eastward view shows the routing of US 12 toward East Helena. A full eastward view of the entire couplet



Photo 19 Westward aerial view of
one-way couplet with the city of
Helena, Montana in the background



Photo 20. Aerial view of east terminus of one-way couplet
in the vicinity of the Capital Interchange



PHOTO 21. Aerial view of the Montana Avenue or western terminus of the one-way couplet.

area with the Montana Avenue terminus in the foreground is presented in Photo 21. Specific scenes from various portions of the one-way couplet which serve to identify and pictorially describe the depicted areas are shown in photos 22 through 31.

2. Background and Construction

Prior to 1960, 11th Avenue in Helena, Montana was the only east-west facility between the junction of Interstate Route I 15 and US 12 on the east and Montana Avenue on the west, a distance of about 1.0 mile. Exhibit 8 and photo 32 illustrate this situation. Prior to 1960, 11th Avenue was designated US 10N and Prospect Avenue was an unpaved road serving merely as a collector street.

About 1958 the practical traffic capacity of two lane, two-way 11th Avenue was being exceeded and it became timely to render a decision to provide relief. The one-way couplet approach was chosen instead of widening 11th Avenue to a 4 lane, two-way facility.

Construction of the couplet was started on September 28, 1960, and the project was completed on June 20, 1962, at a cost of \$85,623, which included the paving of Prospect Avenue. In contrast, the decision to have widened 11th Avenue for 4 lane, two-way operation would have cost \$220,000 exclusive of Rights-of-way and would have involved a longer construction period.

Photo 32 is an aerial view of the study area (June 16, 1959) which was prior to the construction of the couplet. Here, the alignment of 11th Avenue is evident in the eastern outskirts of the city of Helena.



Photo 22. Approach to median strip area preceding the formation of the one-way couplet. Direction is westward from East Helena, Montana



Photo 23. Eastward view of the one-way couplet in the vicinity of Hansford with eastbound 11th Ave. on the right (Motel with enter island strip to the left)



Photo 24. Approach to the one-way couplet from the east showing the formation of the center island strip.



Photo 25. Montana Ave. Terminus of one-way couplet. Eastbound 11th Ave. in the foreground with Safeway Shopping area and parking lot in center.



Photo 26. Prospect Avenue, the westbound artery of one-way couplet in the vicinity of Hannaford with new service station on center island strip in background



Photo 27. Westbound traffic on Prospect Avenue near approach to Montana Avenue



Photo 28 Eastward view of 11th Avenue approaching the vicinity of Capital Hill shopping center from the west



Photo 29. Westward view of 11th Avenue with Capital Hill shopping center on the right



Photo 30. Eastward view of westbound Prospect Avenue with the rear section of shopping center on the right



Photo 31. Approach to Capital Hill shopping center from the east along Prospect Avenue



Photo 32. Aerial View of Study Area in 1959
The Before Period Showing Two-way 11th Avenue and
Unconstructed Prospect Avenue

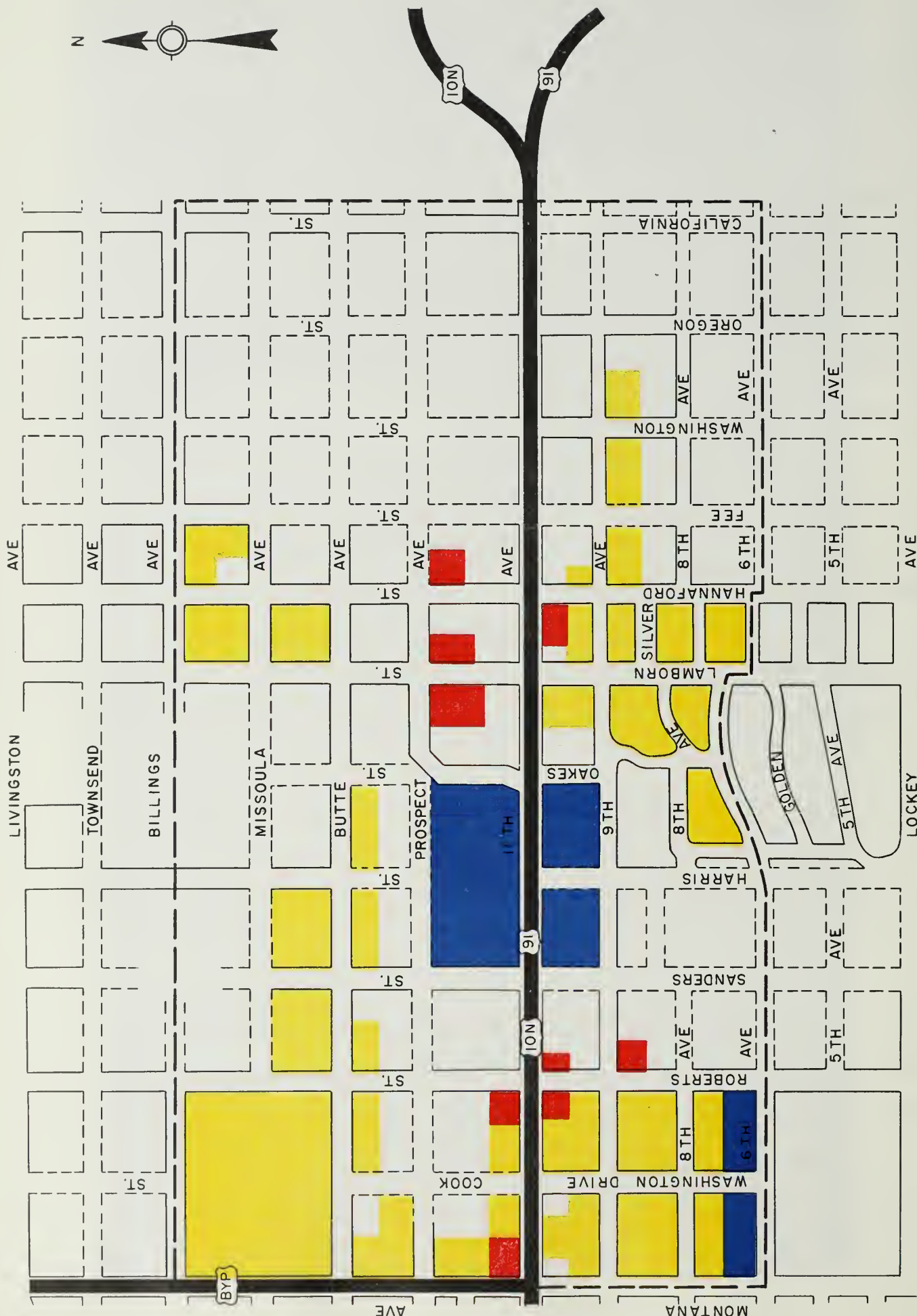
3. Land Utility and Valuation

As a major resource of economic activity, land utility is a good indicator of community growth or stagnation. Thus, during a growth phase of a particular community, use of land is maximized toward full productive capacity. It is during this period that changes in land use also become apparent for optimum utilization of this economic resource. It is quite possible for these mechanisms to go on without impact from highway developments.

It is realized, however, that highway improvements or advances in transportation greatly facilitate the processes of land utilization for profitable market objectives. As already mentioned, the resulting benefits to business and commerce, and to society in general, include lower costs of production and distribution and a net lowered price of a commodity, goods or service. These induce further utilization of latent resources (land, labor, capital and entrepreneurial ability) and effect an expansion of economic activities from which additional benefits are realized by vitalized communities within the confluence of the market opened up by the improved transportation system or facility. From the standpoint of location, therefore, land areas brought within the range of markets by virtue of highway improvements become more productive resources.

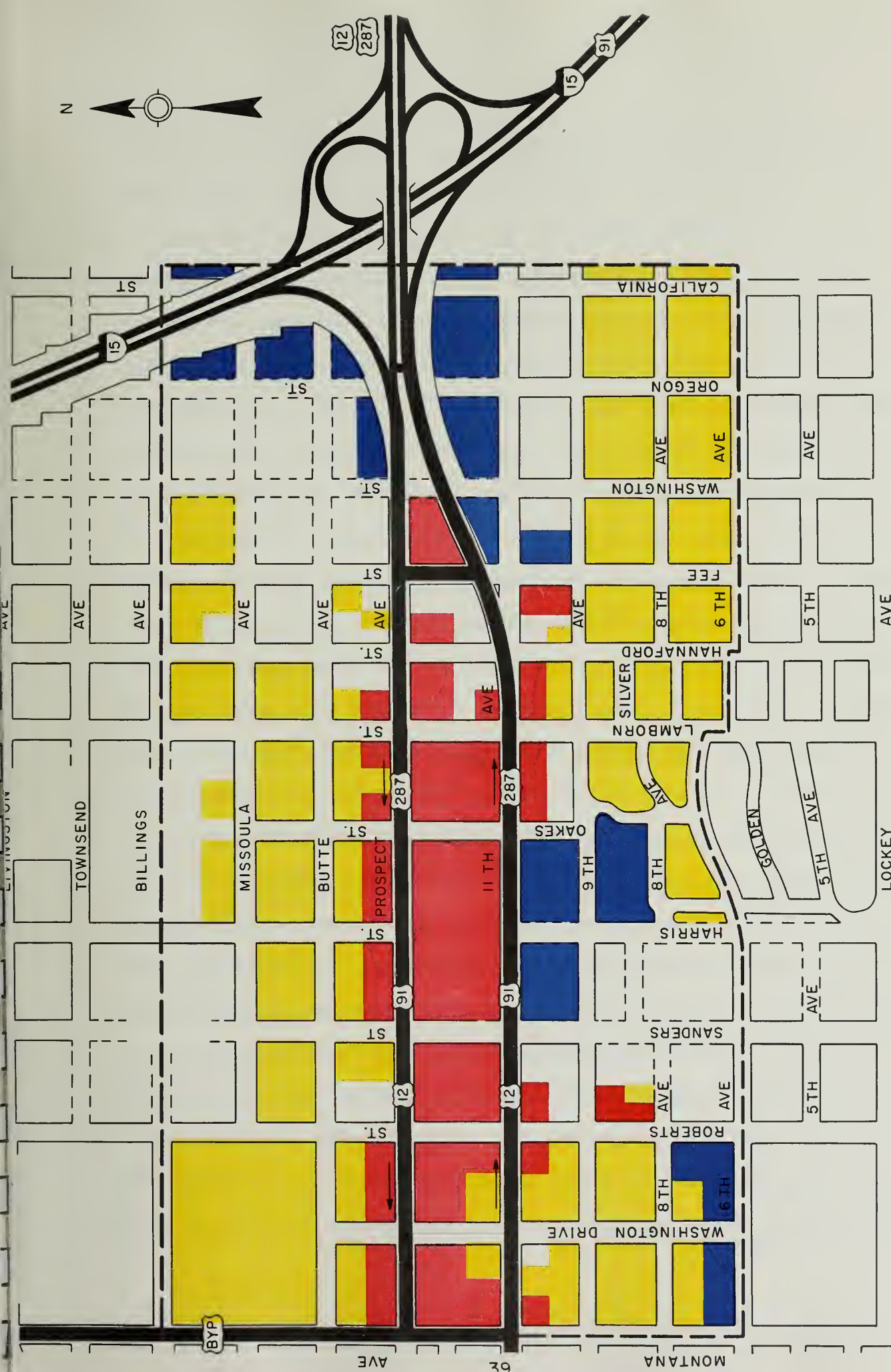
In the study of the one-way couplet in the city of Helena, Montana, the factors of land use and change in use as wrought by the effect of the couplet were analyzed on an approximate "before" and "after" basis.

Exhibits 2 and 3 on pages 38 and 39 show comparative phases of land use in the couplet area in 1956 and 1966. Here, identification of land



ECONOMIC ANALYSIS
ONE-WAY COUPLET
HELENA MONTANA
LAND USE

STUDY AREA BOUNDARY
COMMERCIAL
RESIDENTIAL
PUBLIC AND SEMI-PUBLIC
VACANT



ECONOMIC ANALYSIS
ONE-WAY COUPLET
HELENA MONTANA
LAND USE
1966

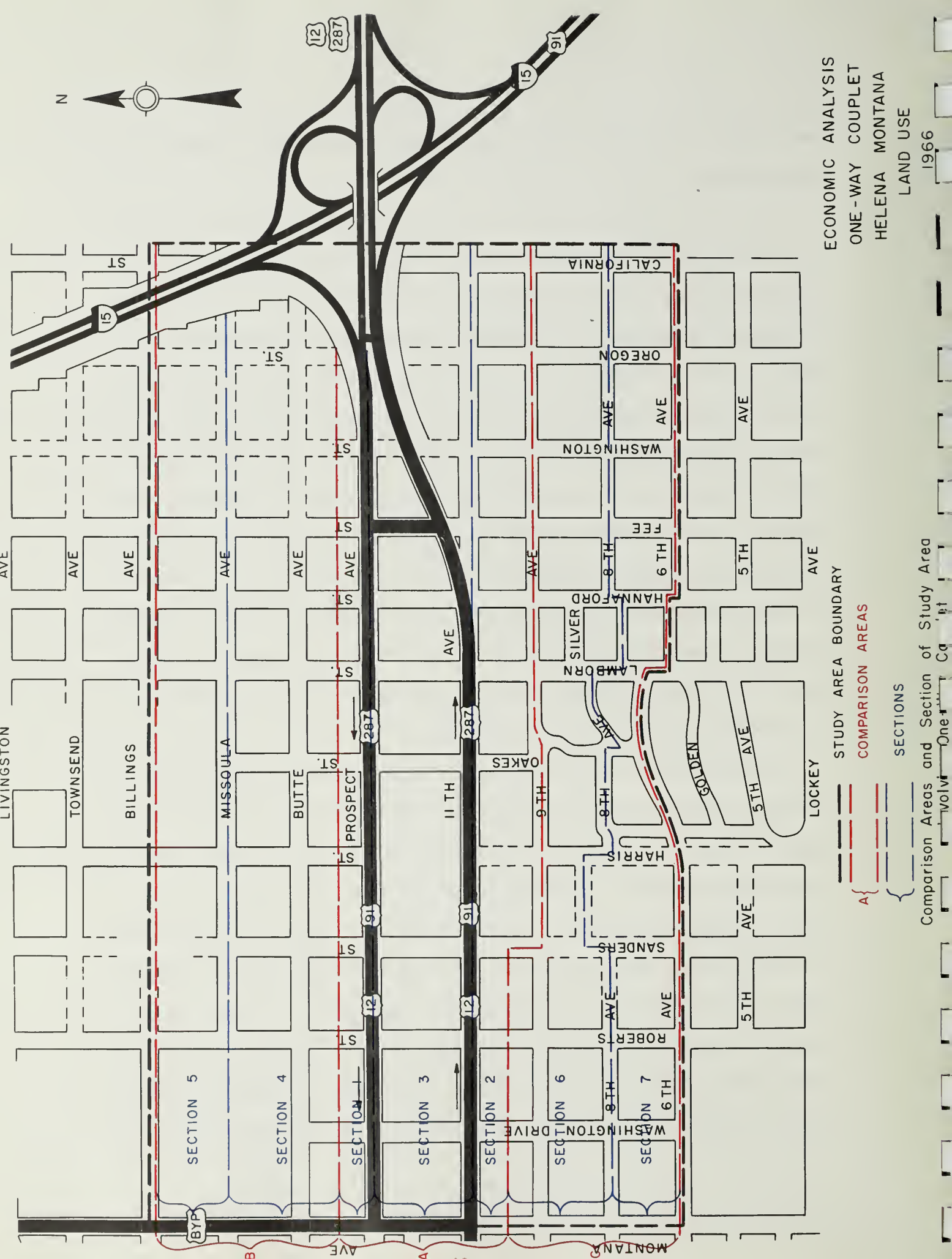


use was depicted by the standard color code for classification into commercial, residential and governmental use. The category for vacant land was also so identified. It is evident from the comparison that commercial utilization of land in the abutting areas of the couplet system became quite pronounced in the "after" phase. This was particularly manifest in the center island strip where the largest percentage of vacant land was converted for commercial application. At this point it must be added that between 1956 and 1960 there was an increase in land use for commercial purposes but the amount was comparatively small and consonant with the secular growth trend of the city of Helena itself. Diversion of land use for residential purposes also showed a significant increase--particularly in the area southeast of 11th Avenue. However, there is no evidence that this category of use could be attributed to the development of the couplet. Photo 32, a 1959 aerial view of the study area, shows the residential buildup of that vicinity which was identified as part of "C" area for comparative analysis and evaluation. Subsequent land valuation analysis between 1955 and 1965 emphatically shows this growth factor in the "before" and "after" period. One promising explanation for this increasing residential use of land without possible impact from 11th Avenue and the couplet in general would be the location of the land within the proximity of the capitol complex. Expanded governmental activity had, during the past decade, increased employment opportunities with the attendant need for convenient housing. The newer eastside section readily supplied this need and it was not long before it became built-up. This is also evidenced from the property valuation trends for this area. Photo 19, a 1966 aerial view of the couplet area, shows the saturation of housing

development in the eastside section of Helena south of 11th Avenue (in the background and to the right).

Exhibit 4 on page 42 depicts the study area with its indicated boundary as comprising three major strips subdivided into sections. It was felt that a better correlation and analysis could be made by such a subdivision where the degree and type of impact made by the couplet on the immediate and surrounding area would be variant. It will be noticed that area "A" comprising sections 1, 2, and 3, consists of the land and properties abutting the highway with section 3 serving as the center island strip. Area "B" consists of a strip of land about $2\frac{1}{2}$ blocks wide contiguous with section 1 north of Prospect Avenue; and area "C", a similar but somewhat more irregular strip, is contiguous with section 2 south of 11th Avenue. It was concluded that properties, land and activities south of 6th Avenue and north of Billings Avenue were reasonably remote from any major influences of the couplet system; therefore, no purpose would be served in extending the boundary lines of the study area.

Assessed valuation trends of land and properties were studied for the above subdivision of the couplet study area to reveal independent and couplet oriented effects. The pertinent information was obtained from the Lewis and Clark County Assessor's office. Lot and block numbers were taken from the map and plat of Helena, South East Quarter. Current owners and values (1965) were found in the "Current Ownership Books" according to the lot and block numbers. In order to find previous owners it was necessary to go into the "Current Lot Book of 1965" and in many cases it was necessary to go back to the "Odd Lot Sheets Book" to determine owners as far back as 1955. Prior years assessed values were found in the "Real



Estate Books" kept in storage. These books, usually four in number for each year, are kept in alphabetical order, and require the owner's name in order to get the value for a particular lot.

Tables 1, 2, and 3, on pages 44 through 47 are compilations of data for taxable valuations for the lots and property improvements for respective areas "A", "B" and "C" as broken down by sections described above. Land and improvement values were also totaled to present valuation on an aggregate basis. The ratio of land and improvement values has been computed by using 1959 as a base year.

Table 4 is a total compilation for the study area and Exhibit 5 on page 48 graphically presents the aggregate lot and improvement valuations for each designated area for the 1955 through 1965 period. Exhibit 6 shows the land valuation separated from the aggregate of land and property improvement valuation, in a similar way and is important in showing the impact of the couplet on the abutting land of Area "A" in comparison with Areas B and C or the nonabutting property.

Table 4 and Exhibit 5 both indicate a sharp rise in aggregate land and property valuation in areas "A" and "C" for the years 1961, 1963, and 1965. Area "B" also shows an increase but it is not as pronounced as in the other two areas. From a quantitative standpoint, it would appear that Area "C", which is located to the south of the property abutting on the couplet, had the largest amount of growth in terms of taxable land and property valuation. It would also appear that the greater portion of the growth in Area "C" occurred after the couplet was opened to traffic in 1962. A cursory examination of the data would lead to the conclusion that the couplet had a greater impact on Area "C" to the south of the abutting

TABLE 1

COMPARATIVE PROPERTY VALUATION FOR AREA A
(LAND ABUTTING THE COUPLET)

Year	Type of Property	Section 1 North of Prospect Ave		Section 2 South of 11th Ave		Section 3 Between 11th & Prospect		Total Area A	
		Value	Ratio To 1959	Value	Ratio To 1959	Value	Ratio To 1959	Value	Ratio To 1959
1955	Land	1,993	0.764	4,440	0.494	8,660	0.448	15,093	0.488
	Improvements	18,970	0.884	60,455	0.846	121,960	0.535	201,385	0.676
	Total	20,963	0.871	64,895	0.807	130,620	0.582	216,478	0.658
1957	Land	2,533	0.971	4,725	0.525	9,445	0.489	16,703	0.540
	Improvements	21,320	0.993	72,630	1.017	129,410	0.631	223,360	0.750
	Total	23,853	0.991	77,355	0.962	138,855	0.619	240,063	0.730
1959 (Base Yr)	Land	2,608	1.000	8,995	1.000	19,320	1.000	30,923	1.000
	Improvements	21,470	1.000	71,430	1.000	205,060	1.000	297,960	1.000
	Total	24,078	1.000	80,425	1.000	224,380	1.000	328,883	1.000
1961	Land	3,663	1.405	22,505	2.502	27,550	1.426	53,718	1.737
	Improvements	21,480	1.001	102,725	1.438	245,320	1.196	369,525	1.240
	Total	25,143	1.044	125,230	1.557	272,870	1.216	423,243	1.287
1963	Land	26,805	10.278	51,965	5.777	73,195	3.783	151,965	4.914
	Improvements	48,610	2.264	121,640	1.702	361,960	1.765	532,210	1.786
	Total	75,415	3.132	173,605	2.159	435,155	1.939	684,175	2.080
1965	Land	53,030	20.334	59,540	6.619	144,895	7.500	257,465	8.326
	Improvements	61,145	2.848	159,030	2.226	418,255	2.040	638,430	2.142
	Total	114,175	4.742	218,570	2.718	563,150	2.510	895,895	2.724

TABLE 2

COMPARATIVE PROPERTY VALUATION FOR AREA B
NONABUTTING PROPERTY NORTH OF PROSPECT AVENUE

Year	Type of Property	Section 4 Butte-Missoula Ave		Section 5 Missoula-Billings Ave		Total Area B	
		Value	Ratio To 1959	Value	Ratio To 1959	Value	Ratio To 1959
1955	Land	5,722	0.645	2,550	0.713	8,272	0.664
	Improvements	<u>94,585</u>	<u>0.734</u>	<u>22,270</u>	<u>0.835</u>	<u>116,855</u>	<u>0.751</u>
	Total	100,307	0.728	24,820	0.821	125,127	0.745
1957	Land	8,707	0.981	3,115	0.871	11,822	0.950
	Improvements	<u>107,915</u>	<u>0.837</u>	<u>24,470</u>	<u>0.918</u>	<u>132,385</u>	<u>0.851</u>
	Total	116,622	0.847	27,585	0.913	144,207	0.858
1959 (Base Year)	Land	8,872	1.000	3,575	1.000	12,447	1.000
	Improvements	<u>128,900</u>	<u>1.000</u>	<u>26,655</u>	<u>1.000</u>	<u>155,555</u>	<u>1.000</u>
	Total	137,772	1.000	30,230	1.000	168,002	1.000
1961	Land	10,132	1.142	3,980	1.113	14,112	1.134
	Improvements	<u>142,965</u>	<u>1.102</u>	<u>34,335</u>	<u>1.288</u>	<u>173,300</u>	<u>1.114</u>
	Total	153,097	1.111	38,315	1.267	187,412	1.116
1963	Land	38,055	4.289	13,230	3.701	51,285	4.120
	Improvements	<u>239,025</u>	<u>1.854</u>	<u>47,085</u>	<u>1.766</u>	<u>286,110</u>	<u>1.832</u>
	Total	277,080	2.011	60,315	1.995	337,395	2.008
1965	Land	38,030	4.287	13,155	3.680	51,185	4.112
	Improvements	<u>273,155</u>	<u>2.112</u>	<u>48,445</u>	<u>1.817</u>	<u>321,600</u>	<u>2.067</u>
	Total	311,185	2.259	61,600	2.038	372,785	2.219

TABLE 3

COMPARATIVE PROPERTY VALUATION FOR AREA C
NONABUTTING PROPERTY SOUTH OF 11 AVENUE

Year	Type of Property	Section 6 8th and 9th Avenues		Section 7 6th and 7th Avenues		Total Area C	
		Value	Ratio To 1952	Value	Ratio To 1952	Value	Ratio To 1952
1955	Land	14,780	0.811	5,535	0.538	20,315	0.713
	Improvements	261,450	0.758	75,550	0.484	337,000	0.673
	Total	276,230	0.761	81,085	0.487	357,315	0.675
1957	Land	16,315	0.896	6,465	0.628	22,780	0.799
	Improvements	307,685	0.892	92,150	0.635	406,835	0.812
	Total	324,000	0.892	105,615	0.634	429,615	0.811
1959 (Base Year)	Land	18,215	1.000	10,290	1.000	28,505	1.000
	Improvements	344,840	1.000	156,250	1.000	501,080	1.000
	Total	363,055	1.000	166,540	1.000	529,585	1.000
1961	Land	32,160	1.766	24,255	2.357	56,415	1.979
	Improvements	407,860	1.183	233,000	1.491	640,860	1.272
	Total	440,020	1.212	257,255	1.547	697,275	1.317
1963	Land	64,260	3.528	43,370	4.215	107,630	3.776
	Improvements	572,420	1.660	393,340	2.517	965,760	1.927
	Total	636,680	1.754	436,710	2.622	1,073,390	2.027
1965	Land	65,260	3.583	45,365	4.408	110,625	3.881
	Improvements	651,195	1.888	453,875	2.905	1,105,070	2.205
	Total	716,455	1.973	499,240	2.998	1,215,695	2.296

TABLE 4

COMPARATIVE PROPERTY VALUATION FOR ENTIRE COUPLET
STUDY AREA

Year	Type of Property	Area "A"			Area "B"			Area "C"			Entire Study Area		
		Abutting Property	Ratio	To 1959	Non Abutting-North	Ratio	To 1959	Non Abutting-South	Ratio	To 1959	Taxable Valuation	Ratio	To 1959
		Taxable Value			Taxable Value			Taxable Value					
1955	Land	15,093	0.488		8,272	0.664		20,315	0.713		43,680		0.608
	Improvements	201,385	0.676		116,855	0.751		337,000	0.673		655,240		0.686
	Total	216,478	0.658		125,127	0.745		357,315	0.675		698,920		0.681
1957	Land	16,703	0.540		11,822	0.950		22,780	0.799		51,305		0.714
	Improvements	223,360	0.750		132,385	0.851		406,835	0.812		762,580		0.799
	Total	240,063	0.730		144,207	0.858		429,615	0.811		813,885		0.793
1959 (Base Year)	Land	20,923	1.000		12,447	1.000		28,505	1.000		71,875		1.000
	Improvements	297,960	1.000		155,555	1.000		501,080	1.000		954,595		1.000
	Total	328,883	1.000		168,002	1.000		529,585	1.000		1,026,470		1.000
1961	Land	53,718	1.737		14,112	1.134		56,415	1.979		124,245		1.728
	Improvements	369,525	1.240		173,300	1.114		640,860	1.279		1,183,685		1.240
	Total	423,243	1.287		187,412	1.116		697,275	1.317		1,307,930		1.274
1963	Land	151,965	4.914		51,285	4.120		107,630	3.776		310,880		4.325
	Improvements	532,210	1.786		286,110	1.839		965,760	1.927		1,784,080		1.869
	Total	684,175	2.080		337,395	2.008		1,073,390	2.027		2,094,960		2.040
1965	Land	257,465	8.326		51,185	4.112		110,625	3.881		419,275		5.833
	Improvements	638,430	2.143		321,600	2.067		1,105,070	2.205		2,065,100		2.163
	Total	895,895	2.724		372,785	2.219		1,215,695	2.290		2,484,375		2.420

ECONOMIC ANALYSIS
ONE-WAY COUPLET-HELENA MONTANA
ASSESSED VALUATION TREND
OF LAND AND IMPROVEMENTS
IN COUPLET AREA

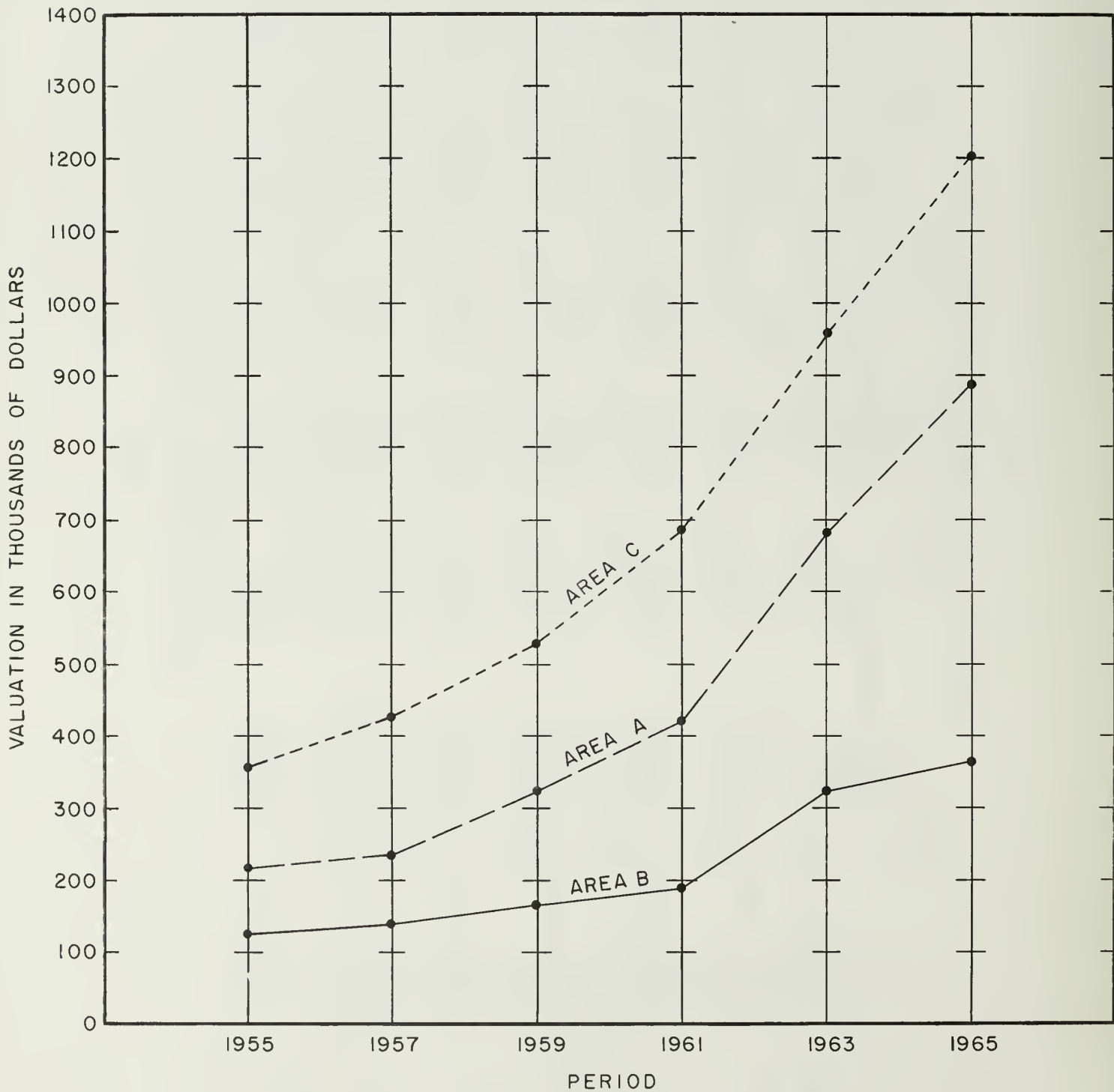
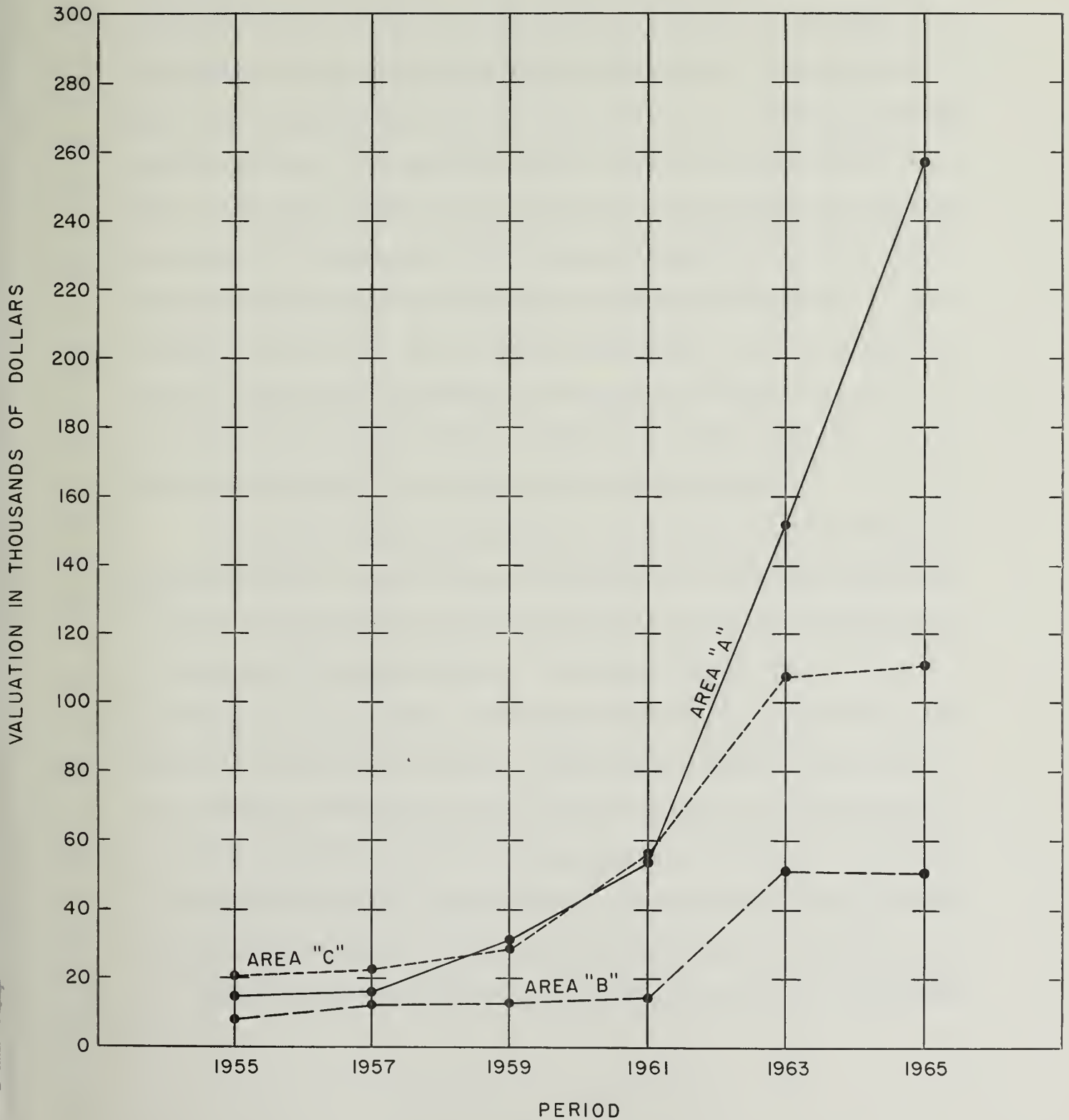


Exhibit 5

ECONOMIC ANALYSIS
ONE-WAY COUPLET-HELENA MONTANA
ASSESSED VALUATION TREND
OF LAND ONLY IN COUPLET
AREA



property than it had on Area "A" which is comprised of the actual abutting property. A further examination of the data, however, indicates that this was not the case.

Exhibit 2 on page 38 and photograph 32 illustrate the large amount of land in Area "C" that was in use for residential purposes before the couplet was opened to traffic. In addition to the already higher assessed value of the land in Area "C", as shown in Table 4, a very high improvement base was present since many homes on 11th Avenue were built or under construction in the "before" period of 1955-1959. Area "C" had also been zoned for residential purposes prior to 1959 which restricted commercial development. It has already been mentioned that it was more the impact of the capitol complex coupled with the geographic suitability of residential land that caused the noticeable quantitative increase in total valuation. This trend for Area "C" continued in the "after" phase and was independent of any affect of the one-way couplet except in the minor sense that after the couplet was completed there might have been some employees and owners of enterprises located and dependent on the couplet who built and bought homes in Area "C" because of convenience and suitability of location with respect to their jobs and responsibilities. In such cases, therefore, there would be causal relationship to bias some of the assessed valuation in Area "C" toward the couplet. However, no survey of such workers, businessmen or homeowners was made. If there were such employees and owners who bought homes after the couplet was built it would be reasonable to assume that in proportion to the total residents of the area the number would be small and inconsequential.

Could the increases in valuation of land and improvements in Area "A", which includes land and properties abutting the couplet, be attributed to the one-way system? First, in considering this situation it should be realized that classification of land and property in Area "A" is designated for commercial and some residential use. As shown in Table 4, the improvement base for valuation in Area "A" is comparatively less than for Area "C" and is principally classed as commercial use. Table 6 also shows total building permits and valuation for the immediate couplet area. Pictorially, this is evidenced in aerial Photo 21 taken in 1966 showing many of the enterprises completed and expanded in the "after" phase up to the 1965 effective valuations. The Capital Hill shopping Center itself, comprising 24 business enterprises, forms a major portion of this improvement. The businesses and commercial enterprises of the couplet are discussed in more detail below.

The impact of the couplet on land valuation for Area "A" is also shown in Table 4. It is seen on a comparative basis with land valuation for Areas "B" and "C" that by 1961 land valuation significantly increased. In fact, in referring to Exhibit 6 it is seen that the curve for Area "A", the immediate couplet area, diverges upward to a large measure from those of Areas "B" and "C". It would be reasonable to conclude, therefore, that the pronounced increase in valuation of the land of the abutting properties (Area "A") in the "after" period is attributable to the impact of the one-way couplet. Some of this was corroborated in an opinion survey of some of the larger enterprise owners who said that they would not have located or relocated in the particular area had not the couplet been built.

Nothing of great importance can be said at this time about Area "B" which has not shown comparable development activity, residential or commercial, as indicative of its land and improvement valuation trends. Referring to Table 2 and to Exhibit 4, it is seen that section 4 contiguous to Area "A" reveals a relatively high improvement base. Most of this could be associated with some impact from the nearby Helena High School, Stewart Homes and other indirect impact from Montana Avenue. It is anticipated that this area will experience more vitalization as the immediate couplet area develops further.

4. Land Sales

It was of interest to determine variations in the market value of land in the couplet area in the "before" and "after" period. Eight parcels were selected from the records of the Lewis and Clark County Clerk and Recorder's Office and their initial and final sales value was determined from the revenue stamps on the deed. Table 5, on page 53, shows what changes took place.

The percent change in land value sales of the parcels in the couplet area shows an upward trend for market price of property sold during the time the couplet was being constructed (1960 - 1962) and subsequent thereto.

TABLE 5

TRANSITION OF MARKET VALUE OF LAND IN
THE COUPLET AREA IN THE "BEFORE" AND
"AFTER" PERIOD

<u>Initial Year</u>	<u>Number of Lots</u>	<u>Sale Value</u>	<u>Year Sold</u>	<u>Sale Value</u>	<u>Percent Change</u>
1943	3	\$100	1962	\$3,000	+2,900
1955	6	\$2,500	1962	\$14,000	+ 460
1956	4	\$1,000	1961	\$2,000	+ 100
1956	3	\$1,500	1962*	\$1,500	+ 100
			1963*	\$1,500	+ 100
1957	2	\$750	1962	\$2,000	+ 167
1959	1	\$125	1960	\$1,000	+ 700
1959	2	\$250	1962	\$1,500	+ 500
1959	6	\$17,000	1964	\$43,000	+ 460

* (this involved the sale of only $1\frac{1}{2}$ lots)

5. BUILDING PERMITS

As an appropriate yardstick to measure the scope and amount of land development for the immediate couplet area, building permits were ascertained for three 6 year periods from 1948 through 1965. These were then compared with the total permits for the city of Helena for valuation trends. Tables 6 and 7 present the quantitative data which is more illustratively resolved by Exhibits 7 and 8. The latter shows valuation trend of building permits for the couplet in terms of percent of total permit valuation. Here, a sizable increase of 5.9 percent is indicated for the post 1959 period comprising most of the "after" period. Although from the standpoint of numerical

percentage, 5.9 seems small, it must be considered that the immediate couplet area (Area A) comprises less than 100 acres of abutting land which is insignificant to the total acreage of the city of Helena. Graphically, the impact effect is shown by the sharp increase in the slope as compared to the 1948 - 1959 period. From another approach, total dollar valuation was averaged out on the basis of the number of permits for each 6 month period as shown in Tables 6 and 7, and a comparative plot for each period was made for Area A and the city of Helena. The trend showing average value of building permits in thousands of dollars turns sharply upward for the immediate couplet area after 1959 in contrast to an imperceptible increase for the city of Helena. Again, this trend is predominantly manifest in the "after" period connoting the economic leverage of the couplet facility on the immediate land and property areas.

TABLE 6

TOTAL BUILDING PERMITS AND VALUATIONS FOR THE CITY OF HELENA

6 YEAR PERIODS 1948 - 1965

<u>6 Year Periods</u>	<u>No. of Permits</u>	<u>Valuation</u>	<u>Average Value</u>
		\$	\$
1948- 1953	2,619	11,936,971	4,558
1954- 1959	2,334	21,755,862	9,321
1960- 1965	<u>2,709</u>	<u>27,886,255</u>	10,294
	7,662	\$61,579,088	

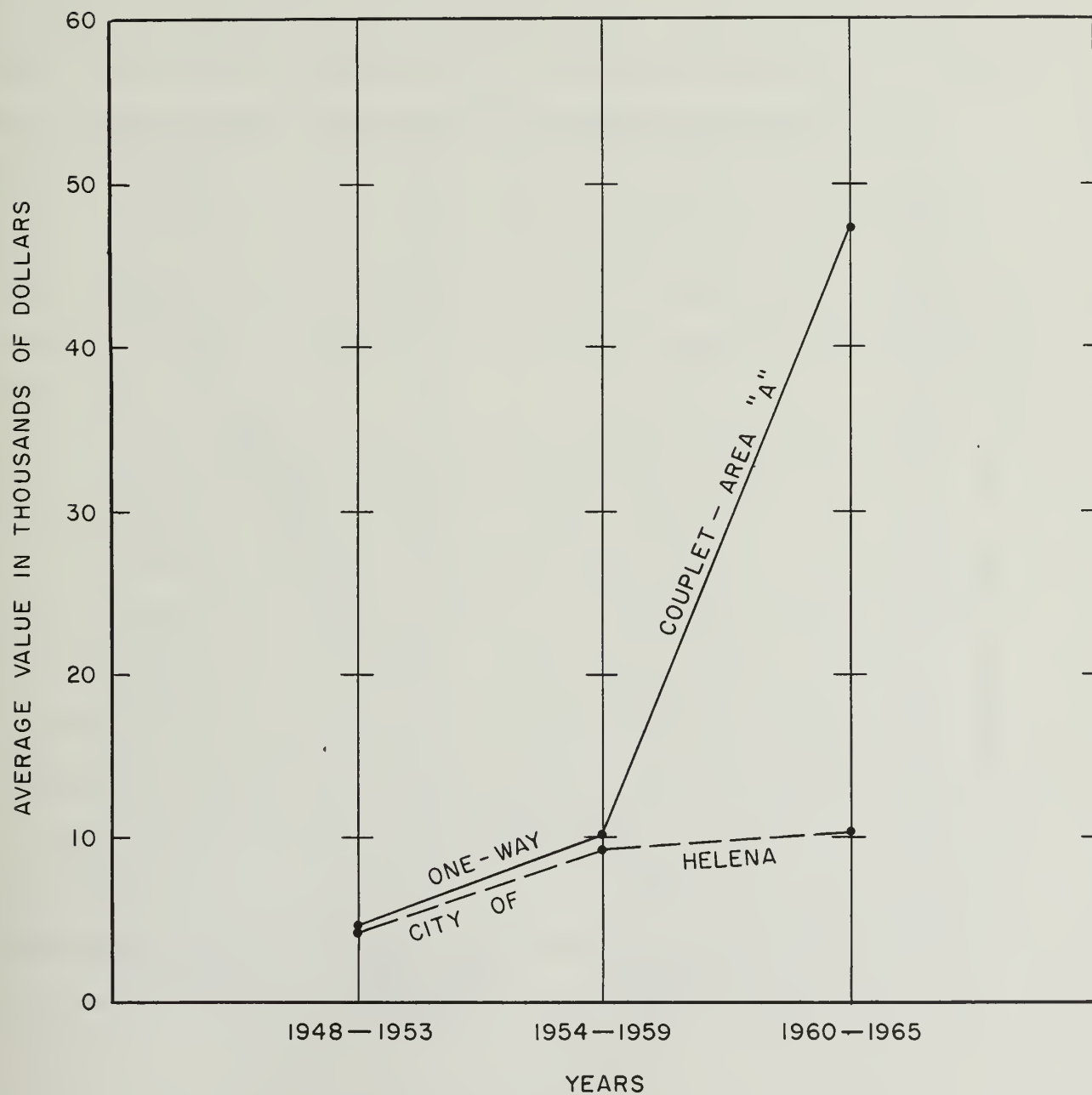
TABLE 7

TOTAL BUILDING PERMITS AND VALUATIONS FOR THE COUPLET AREA*

1948- 1953	23	\$110,680	\$4,812
1954- 1959	36	364,825	10,134
1960- 1965	<u>45</u>	<u>2,122,640</u>	47,170
	104	\$2,598,145	

* Note: Building permits on the couplet include only the abutting property and the island strip

ECONOMIC ANALYSIS
ONE-WAY COUPLET-HELENA MONTANA
COMPARISON OF BUILDING PERMITS AVERAGE VALUE
ONE-WAY COUPLET AND CITY OF HELENA
1948-1965



ECONOMIC ANALYSIS
ONE-WAY COUPLET HELENA MONTANA
COMPARISON OF BUILDING PERMIT VALUATION
ONE-WAY COUPLET AND CITY OF HELENA
1948 - 1965

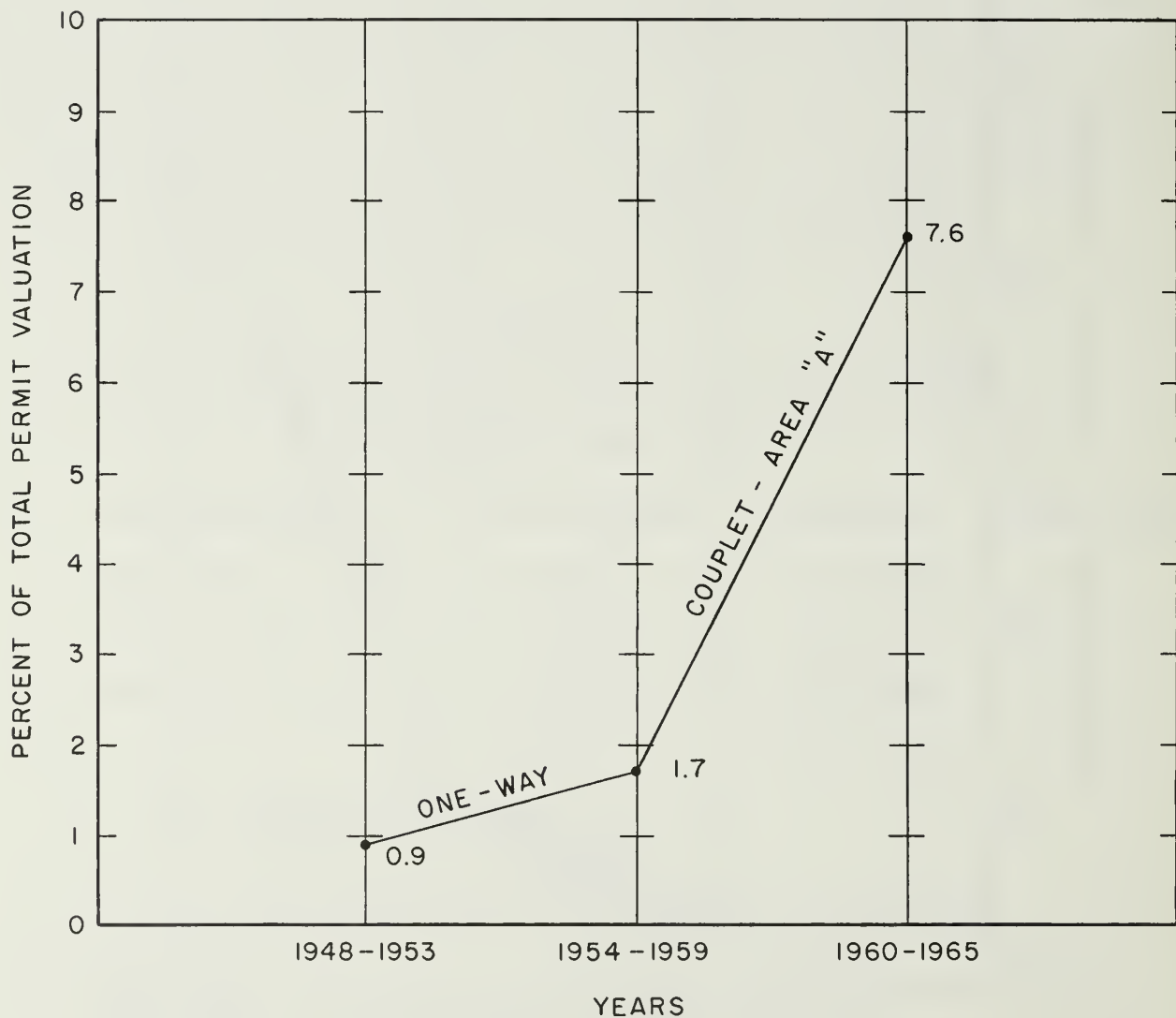


Exhibit 8

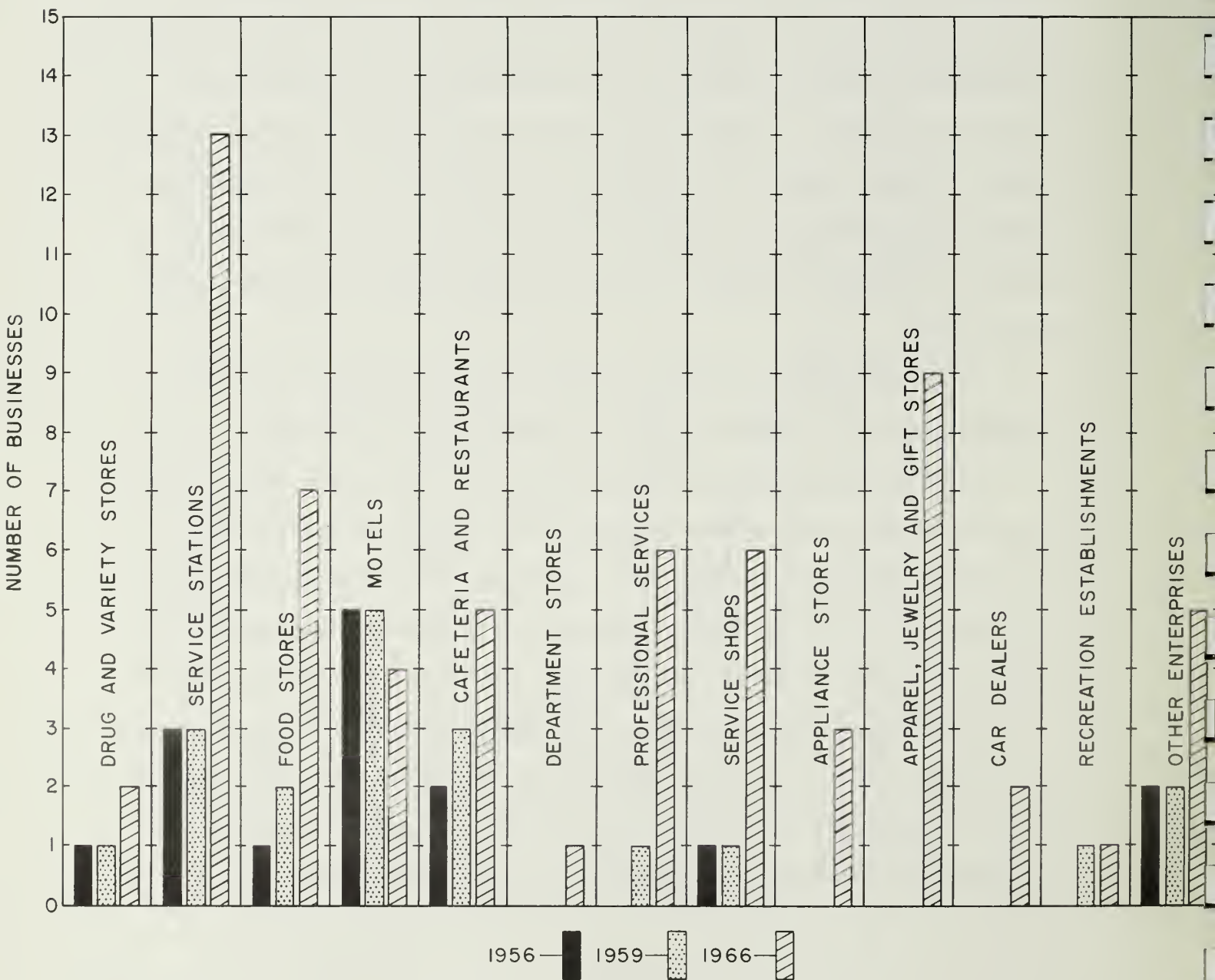
6. Business Enterprises and Employment

Currently, there are 65 business enterprises located in the couplet study area, of which 64 are in the abutting land area (Area "A"). One motel is located south of 11th Avenue within the "C" area, most of which is zoned for residential purposes. An inventory of these activities is presented in Exhibit 9 for 1956, 1959 and 1966. The post 1959 period would be predominantly representative of the "after" period since construction started in 1960. A net total of 46 enterprises had come into the area of the couplet, of which the majority were operational in the "after" phase. Of these, 24, or 52 per cent, were accounted for by the Capital Hill Shopping Center which was completed in 1965 at an investment of over \$1.5 million. Referring to Exhibit 9, the following comments and observations can be made.

In the drug-variety category one large store was opened in the shopping center to presumably handle a large volume of business.

Ten additional service stations were opened since 1959 at which time there were only three stations located in the vicinity of Roberts Street and 11th Avenue (Refer to Photo 32). Of the new additions two located off 11th Avenue in the eastern part of the immediate couplet area while seven stations were located along the north side of Prospect Avenue (section 1. of Area "A" as indicated in Exhibit 10). The tenth station was located midway between 11th and Prospect Avenues in the area where the couplet emerges. One station recently became inoperative leaving 12 stations operating on 2.0 miles of highway, or, an average of .175 miles per station.

ECONOMIC ANALYSIS
ONE-WAY COUPLET-HELENA MONTANA
COMPARISON OF THE NUMBER OF
BUSINESS ENTERPRISES
1956 - 1966



Although gasoline gallonage data was obtained from the Montana Petroleum Association for the distributorship stations there was no reliable way to segregate the gallonage sold by the stations located on the couplet from the Helena totals. The main difficulty was due to the variant and indirect distribution methods associated with these stations. Because of the large number of service stations located on the couplet, it is dubious that sales gallonage would show any dramatic increase for most of the stations. To the contrary, it can be reasoned that several would be operating at high volume while many would be close to margin. Therefore, because of the high concentration of service stations on the couplet, it is unlikely that there will be any increase in the number of stations beyond the 12 or 13 now operating, unless traffic volumes would increase substantially.

Of the five new additions to the food store category in the couplet area, the most significant was a large supermarket which was established in the Capital Hill Shopping Center.

In the highway oriented motel category it is interesting to note a decline in the number of enterprises, i.e. four units in 1966 as compared with five units in previous periods. However, total motel capacity had been increased by an expansion of existing facilities of some of the larger motels as reflected in building permits and valuations.

In the cafeteria-restaurant area, one large cafeteria was established in the Capital Hill Shopping Center, and a large restaurant-tavern expanded operations in the "after" period.

A very large department store in the new shopping center opened for business in 1965. The nearest competition to this enterprise is located

in the downtown area of Helena, about a mile and a half away.

The new shopping center also provided modern and attractive facilities to accommodate professional and specialty offices. Five in this category located on the couplet, mostly in the facilities of the shopping center.

Service shops, appliances, apparel, jewelry and gift stores were inevitable additions to a new shopping center area and 17 enterprises embracing the above categories came into operation. Outside of one enterprise, the couplet area was lacking in these businesses prior to 1959.

A large car dealer relocated to the couplet area and built an elaborate and modern facility for expanded operations and a used car dealer established his business in the same vicinity.

Four other enterprises became established on the couplet some of which were specifically oriented to the highway.

The Capital Hill Shopping Center had provided for 24 enterprises which accounted for approximately 149 employees on a full time basis with an additional 56 as part time employees or a total employment of 205 persons. The total study area itself accounted for approximately 323 full time and 103 part time workers for a grand total of 426 employees, which is representative of an appreciable labor force for the relatively small area. The shopping center itself covers 10.9 acres while the study area encompasses approximately 203 acres.

Despite this small land-use acreage, 625,000 sq. ft. of parking capacity has been made available in the immediate couplet area. This space is tabulated in the following table:



Photo 33. Large motel on center island strip



Photo 34. Service station, restaurant and motel on center island strip



Photo 35. Food stores on 11th Avenue and new contractor's building on right



Photo 36. Drug-variety store in Capital Hill Shopping Center



Photo 37. Department store - part of Capital Hill shopping center



Photo 38. Recreation center



Photo 39. Supermarket - part of Capital Hill shopping center



Photo 40. Service shops and stores in Capital Hill shopping center



Photo 41. Supermarket parking at Capital Hill Shopping Center



Photo 42. Department store parking west side of Capital Hill Shopping Center



Photo 43. Service shops and store parking in the front of Capital Hill Shopping Center



Photo 44. Department Store parking northeast side of Capital Hill Shopping Center

TABLE 8

PARKING CAPACITY OF COUPLET

Imperial Lanes	90,000 sq ft
Jorgensons	50,000
Capital Hill	345,000
Capital Ford	70,000
Safeway Shopping Area	<u>70,000</u>
TOTAL	625,000 sq ft

Photos 45 through 48 depict the above parking areas.

The total "off-street nonmetered" parking for the entire couplet is about 740,000 sq. ft.

Other information about the businesses in the couplet area was obtained from a questionnaire shown in Exhibit 28 in the Appendix section. Of the 65 businesses located on the couplet, 58 were responsive. Two were closed and five would not cooperate.

Table 9 presents a tabulation of businesses classified as to the type of operating structure:

TABLE 9

OPERATING STRUCTURE OF BUSINESS ENTERPRISES
IN COUPLET AREA

<u>Type of Structure</u>	<u>Number of Businesses</u>
Proprietorships	30
Partnerships	4
Corporations	<u>24</u>
TOTAL	58



Photo 45. Auto dealer parking with Prospect Avenue in foreground



Photo 46. Restaurant and motel parking



Photo 47. Supermarket parking with Montana & 11th Avenue in foreground



Photo 48. Recreation center parking with 11th Avenue in foreground

Table 10 shows the following distribution by gross monthly payroll.

TABLE 10

APPROXIMATE MONTHLY PAYROLL OF BUSINESS
ENTERPRISES IN COUPLET AREA

<u>Range</u>	<u>Number of Businesses</u>
\$0 - 1,000	36
1,000 - 2,500	11
2,500 - 5,000	5
5,000 - 10,000	2
Over 10,000	<u>4</u>
TOTAL	58

Twelve enterprises said that they owned their own property, and 46 of the 58 said that they had a leasing arrangement.

No information could be obtained on the volume of Gross Monthly Sales, Average Daily Customers, or other similar business yardsticks.

Four questions were presented to businessmen located on or in the couplet area to obtain business attitudes toward this highway improvement. Answers to these questions are tabulated in the following tables:

TABLE 11

RESPONSE TO QUESTION (1) OF BUSINESS QUESTIONNAIRE

(1) What were your reasons for locating in the couplet area?

<u>Reasons Given</u>	<u>Number of Businesses</u>
Growth	12
Busy Street (Large traffic volume)	11
Available Location	20
Owned the Property	2
Parking Facilities	2
More Presentable Location	1
Easier Access	1
No opinion	<u>9</u>
TOTAL	58

TABLE 12

RESPONSE TO QUESTION (2) OF BUSINESS QUESTIONNAIRE

(2) Would you favor 11th and Prospect Avenues becoming two-way arteries?

<u>Response</u>	<u>Number of Businesses</u>
Yes	8
No	35
No Opinion	<u>15</u>
TOTAL	58

TABLE 13

RESPONSE TO QUESTION (3) OF BUSINESS QUESTIONNAIRE

(3) What highway improvements would you favor in your present location.

<u>Answers</u>	<u>Number of Businesses</u>
Have double lines removed on 11th Avenue	1
More and larger one-way street signs	7
Speed limit enforced	2
Bypass signs	1
Better drainage	1
Widen 11th Avenue	9
Drop 11th Avenue to Shopping Center level	1
No opinion	<u>36</u>
TOTAL	58

TABLE 14

RESPONSE TO QUESTION (4) OF BUSINESS QUESTIONNAIRE

(4) What property improvements and developments would you like to see in this area?

<u>Answers</u>	<u>Number of Businesses</u>
Additional businesses located in area	21
Office buildings	2
More motels	5
Industry	1
More street lights	3
Less grocery stores	1
A bank located in the area	2
Clean up the area (junk)	2
No opinion	<u>21</u>
TOTAL	58

Although there were no figures that could be obtained on the volume of sales, response was evoked with regard to the changes in business sales volume. Table 15 below presents this information:

TABLE 15

BUSINESS MENS' RESPONSE TO CHANGES IN 1965 AND 1966 SALES VOLUME

<u>Response</u>	<u>Number of Businesses</u>
Volume had improved	27
Volume had declined	3
Volume had not changed	21
Could not say	<u>7</u>
TOTAL	58

7. Traffic Volumes

Since the volume of traffic using any road or street is usually a good indicator of the importance of a route, an analysis was made of the average daily traffic volumes on the couplet in the before and after periods relating to the construction of Prospect Avenue. Since some portions of Prospect Avenue did not exist prior to construction by the State in 1961-1962, all traffic in the "before" period necessarily used 11th Avenue. Traffic volumes during the years 1956 and 1960 used 11th Avenue as a two way arterial as shown in the following tabulation.

TABLE 16

AVERAGE DAILY TRAFFIC IN THE BEFORE AND AFTER PERIODS ON THE ONE-WAY COUPLET

<u>Route</u>	<u>Average Daily Traffic Volumes</u>			
	<u>1956</u>	<u>1960</u>	<u>1956</u>	<u>1966</u>
11th Avenue - Two-way	5100	5970	1.171	
11th Avenue One-Way				
Prospect Ave. One-Way			11,165	1.869

The preceding tabulation indicates a 17 per cent increase in traffic volumes on 11th Avenue in the "before" period from 1956-1960 and an 87 percent increase in the "after" period from 1960-1966 after the couplet was placed in one-way operation. A permanent counter located on Montana Avenue (US 12 Bypass) near the western terminus of the couplet indicated increases of 26 per cent in the period from 1956- to 1960 and 38 per cent from 1960 to 1966.

These percentages indicate that traffic increases from 1960-1966 on the couplet were more than double those experienced in the same period on Montana Avenue which is a four-lane facility serving as a bypass for US 12, in the same area. Conversely the increases in traffic volumes on 11th Avenue under two-way operation during the period of 1956-1960 were about 65 per cent of those recorded at the Montana Avenue counter.

8. Accidents and Safety Aspects

Since its operation in 1962, the one-way couplet was evaluated in terms of its accident history and safety record. There was insufficient data in the "before" period to make a reliable comparison. Information and data were obtained from the Traffic Engineering Section of the Montana State Highway Commission. An analysis of the 1962 to 1966 period of operation of the couplet shows the following:

Of the 113 accidents that occurred in that period, only one involved a fatality. There were 17 accidents involving personal injury, and 95 involving property damage. Table 18 summarizes the nature and conditions of the accident situation. In conjunction with this the following comments by the Traffic Engineer in his September 17, 1965 "Report on the Operation of 11th and Prospect Avenues in Helena" are available.

TABLE 17

SUMMARY OF ACCIDENTS AND CONDITIONS
FOR ONE-WAY COUPLET IN HELENA
1962 - 1966

Time of Day		Time of Year	
	Number of Accidents		Number of Accidents
6 AM - 10 AM.....	16	Dec. - Feb.....	34
10 AM - 4 PM.....	32	Mar. - May.....	25
4 PM - 7 PM.....	32	Jun. - Aug.....	30
7 PM - 12 Mid.....	25	Sep. - Nov.....	24
12 Mid.- 6 AM	5	TOTAL:	113
Unknown.....	3		
TOTAL:	113		

Weather Conditions		Accident Type	
Clear.....	84	Sideswipe.....	4
Fog.....	1	Rear end.....	30
Rain.....	5	Right angle.....	26
Sleet.....	0	Left turn.....	5
Snow.....	13	Other.....	14
Overcast only.....	8	Pedestrian.....	5
Unknown.....	2	Left turn from right lane...	28
TOTAL:	113	Right turn from left lane...	1
		TOTAL:	113

Pavement Conditions	
Dry.....	73
Icy.....	25
Wet.....	13
Unknown.....	2
TOTAL:	113

"There is a tendency to speed on the couplet, particularly in the vicinity of the eastern end." In the questionnaire survey analysis many of the respondents complained of speeding motorists and felt that the posted speed limits should be strictly enforced. The Traffic Engineer's analysis showed that the 85 percentile speed was slightly above the posted limit of 35 MPH on each street near intersections of Sanders Street and Lamborn Street.

Most of the accidents, 74 per cent, occurred on days when the weather was clear. Sixty-five per cent occurred on dry pavement.

One interesting facet concerning the numerous rear end collisions, as shown in Table 18, is that most of them occurred on the approaches to 11th Avenue or Prospect Avenue. In many cases there were icy road conditions at the time. At this point it might be significant to explain that approaches to the couplet from the south are from a downward incline and make access to the couplet extremely hazardous under icy conditions despite the presence of adequate stop signs.

Twenty-eight of the total accidents, or 25 per cent, involved vehicles that attempted to turn left from the right hand lane. Sixty-three per cent of these vehicles had out-of-town registrations.

There were two accidents that involved vehicles traveling the wrong way and one of these was a case of drunken driving.

There was only one fatality on the couplet but in this case the victim did not stop when entering the facility.

Recommendations by the Traffic Engineer of corrective measures included additional posting of "One-Way Street" signs in hazardous areas, particularly west of Lamborn Street on Prospect Avenue. The report also recommended directional arrows be painted on the pavement of each lane in advance of the

intersections to indicate the traffic movements that can be made from that lane.

Accident rates have been computed for each leg of the couplet for the five-year period from 1962 to 1965. These rates, as shown in the following tabulation, have been based on the number of all types of accidents per 10 million vehicle-miles of travel.

<u>Couplet Leg</u>	<u>Five Year Average ADT</u>	<u>Total Number of Accidents</u>	<u>Accident Rate</u>
11th Avenue	4,150	53	69.98
Prospect Avenue	4,630	60	71.01

Sufficient data are not available to compute comparable rates for the other major streets in Helena. A comprehensive accident study was made in Great Falls, however, which indicated a comparable rate of 144.2 accidents per 10 million vehicle-miles on the major street system for the three-year period from 1960 to 1962.

Some measure of accident severity may be obtained, by relating the number of accidents causing fatal and nonfatal injuries to vehicle-miles of travel, during a specified period of time. These rates are usually expressed as the number per 100 million vehicle-miles of travel. Injury accident rates for the couplet have been computed on this basis, as shown in the following tabulation:

<u>Couplet Leg</u>	<u>Five Year Average ADT</u>	<u>Number of Injury Accidents</u>	<u>Injury Accident Rate</u>
11th Avenue	4,150	8	105.6
Prospect Avenue	4,630	10	118.3

The injury accident rates computed for the couplet compare quite favorably with the acceptable standard of from 75 to 150 accidents per 100 million vehicle-miles established for 4-lane divided urban highways by the National Committee for Urban Transportation.

9. Questionnaire Survey of Residents in Couplet Area

In completing the evaluation of the one-way couplet it was desirable to obtain information on the nature, purpose and scope of use of the highway by the residents of the study area. It was also of interest and importance to find out their prevailing attitudes and opinions about the one-way system, and if they had preference for a two-way artery instead. Comments and constructive criticism were invited.

Exhibit 11 in the Appendix section is a sample of the convenient mail-back questionnaire that was devised for this purpose. A maximum of eight questions (with subdivisions) were asked to avoid disinterest and to prevent the inquiry from becoming cumbersome and tedious.

A total of 503 questionnaires were distributed to residents in the couplet area. Of these, 180 or 35.8 per cent, were returned.

Questions 1 and 2 were included to determine the occupational complexion of the couplet community. Table 18 comprises a breakdown of the respondents in occupational categories.

The great majority of residents are married and the husband is engaged in a white collar or professional job while the wife is occupied with home-making. Thus 84, or 46.7 per cent, of the respondents fell into this class.

About 20.5 per cent of the respondents comprise households in which both husband and wife are gainfully employed in the white collar-professional field.

Approximately 11.1 per cent of the respondents fall into the class of white-collar-professional workers who are single, widow, widower, divorced, or separated.

There were eleven, or 6.1 per cent, who replied that they and their spouses were on complete retirement. Four, or 2.2 per cent, were partially retired as a family, i. e. the husband had retired but the wife was working in a white collar occupation. Three, or 1.7 per cent, constituted single retirees.

Other small variations in the aforesaid categories are indicated in Table 18 below.

TABLE 18

SUMMARY OF OCCUPATIONAL CLASSES
FOR RESIDENT-RESPONDENTS OF COUPLET

<u>Occupation Category</u>	<u>Number of Respondents</u>	<u>Per Cent</u>
White collar or Professional (Married)		
Wife: homemaker - - - - -	84	46.7
Wife: employed (husband: student, etc.) - - - -	2	1.1
Blue collar (married, wife homemaker) - - - - -	0	0.0
White collar or Professional (married: both employed)	37	20.5
Husband white collar; Wife blue collar - - - - -	0	0.0
Husband blue collar; Wife white collar - - - - -	5	2.8
Husband and wife: blue collar - - - - -	1	0.6
White collar or Professional (single, etc.) - - - -	20	11.1
Blue collar (single, etc.) - - - - -	3	1.7
Retired (husband and wife)- - - - -	11	6.1
Retired (single, etc.) - - - - -	3	1.7
Retired husband (wife working, white collar job) - -	4	2.2
Other (wife of Serviceman, etc.) - - - - -	4	2.2
Incomplete or no answer - - - - -	<u>6</u>	<u>3.3</u>
TOTAL	180	100.0

Question 3. was included to relate respondents' locations with respect to the couplet. It might also serve the purpose of showing a relationship between the respondent's attitude toward the couplet (as elicited in Questions 5. through 8.) and his location.

Since the large majority of residences in the couplet area are located south of 11th Avenue, the largest distribution was made to that area. Table 19 below shows where the replies came from.

TABLE 19

APPROXIMATE LOCATION OF RESPONDENTS WITH RESPECT
TO ONE-WAY COUPLET

Location	Number of Replies		Per Cent of Total
On the Couplet.....	8		4.4
South of 11th Avenue.....	147		81.7
1 block south.....	34	18.9 %	
2 blocks south.....	48	26.7	
3 blocks south.....	31	17.2	
4 blocks south.....	23	12.8	
5 blocks south.....	11	6.1	
Total: 147		81.7	
North of Prospect.....	23		12.8
1 block north.....	14	7.8	
2 blocks north.....	6	3.3	
3 blocks north.....	3	1.7	
Total: 23		12.8	
Indeterminate.....	2		1.1
TOTAL: 180			100.0

Table 20 on the following page presents information and data for Question No. 4 of the questionnaire which asks: "For what purposes do you and/or members of your family use the 11th and Prospect One-Way Route?"

From the standpoint of daily shopping trips it is interesting to see that the downtown Helena area is the most frequently used. Several reasons could account for this. First, the downtown area has the greatest number and variety of shopping enterprises including outlets for specialty goods and services. Second, the downtown area has a large number of professional services where patronage has long been established.

When shopping frequency is several times a week, however, 64.5 per cent of the replies indicate use of the couplet to get to the Capital Hill Shopping Center. Relative to the factor of convenience, therefore, it would be natural for the nearby residents to favor this area considering all other factors to be nearly equal. However, from the standpoint of free and available parking facilities, all of the Helena shopping centers would offer an advantage in comparison with the downtown area.

About 58 percent of the replies indicated use of the couplet on an individual basis for employment while 28.0 percent showed an additional or separate use for such purpose by the other spouse. Approximately 11 per cent of the replies said that other members of the family used the couplet in going to and from work and 3.0 per cent indicated the use of a car pool.

TABLE 20

SUMMARY OF PURPOSES FOR USE OF ONE-WAY
COUPLET BY RESIDENTS OF STUDY AREA

SHOPPING PURPOSE:

Area	Capital Hill		Lundy		Downtown Helena		Other	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
Frequency								
Daily	16	9.3	9	7.2	23	15.2	12	13.1
Several Times Weekly	111	64.5	20	16.1	53	35.1	43	46.9
Occasionally	<u>45</u>	<u>26.2</u>	<u>95</u>	<u>76.7</u>	<u>75</u>	<u>49.7</u>	<u>37</u>	<u>40.0</u>
TOTAL	172	100.0	124	100.0	151	100.0	92	100.0

	TO AND FROM WORK		VISIT FRIENDS AND RELATIVES		OTHER PURPOSES	
	Number	Percentage	Number	Percentage	Number	Percentage
User						
Individual	<u>77</u>	<u>58.4</u>	<u>6</u>	<u>4.1</u>	<u>17</u>	<u>16.8</u>
Spouse	37	28.0	40	27.6	30	29.7
Other Members	14	10.6	40	27.6	33	32.7
Car Pool	<u>4</u>	<u>3.0</u>	<u>59</u>	<u>40.7</u>	<u>21</u>	<u>20.8</u>
TOTAL	132	100.0	145	100.0	101	100.0

Use of the couplet for visiting of friend and relatives and other purposes was also tabulated on a frequency basis and the results are also shown in Table 20.

Question No. 5 asked: "What do you Like about the 11th and Prospect One-Way Route?" Space was provided for several views. Table 21 below categorizes the type of response received from the 180 returns.

TABLE 21

TYPE OF RESPONSE TO QUESTION NUMBER 5

<u>Type of Response</u>	<u>Number of Replies</u>
Positive (pro couplet) - - - - -	147
Negative (anti couplet) - - - - -	8
Indifferent - - - - -	3
No response (blank) - - - - -	<u>22</u>
TOTAL	180

Even though Question No. 6 which followed elicited negative response to the couplet, i.e. dislike for the couplet, eight negative replies were made to Question No. 5. Also, many of the respondents revealed simultaneous "likes" and "dislikes" of the couplet.

There were 200 reasons or views expressed in favoring or "liking" the one-way system. Table 22 categorizes these as follows:

TABLE 22
PROCOUPLET FACTORS ADVANCED BY RESPONDENTS

<u>Procouplet Factor</u>	<u>Number of Views</u>	<u>Per cent</u>
Convenience and Facility - - - - -	137	68.5
Safety- - - - -	44	22.0
General - - - - -	8	4.0
Other - - - - -	<u>11</u>	<u>5.5</u>
TOTAL	200	100.0

One hundred thirty seven, or 68.5 per cent, of the views were procouplet in the light of convenience and facility factors. These included: 1) quicker traffic flow; 2) smoother traffic flow; 3) less congestion; 4) less confusion; 5) easy to cross; 6) easy to enter and exit; 7) direct routing of bypass traffic (trucks, etc.); 8) minimum stops and starts; 9) time saving; 10) quick ingress and exit of Helena; 11) easy access to and from the interchange; 12) accommodation of large volume of traffic; 13) better ability to pass slow moving traffic; 14) no oncoming traffic; 15) easier negotiation of corner of 11th and Montana; 16) better noon and rush hour traffic flow; 17) easy to enter and leave shopping center; 18) fewer intersections and stop lights.

Twenty-two per cent of the views favoring the couplet had to do with safety attributes. These were manifest along the following lines: 1) less dangerous or more safe (without telling why); 2) fewer opportunities for accidents; 3) safer for pedestrians; 4) safe entry from side street; 5) no oncoming traffic (avoidance of head on collisions); 6) safe entry and exit of interchange; 7) safer passing of slow traffic; 8) safer access to and

from shopping center; 9) more confidence in auto operation; 10) no interference from left turns of approaching traffic; 11) wider street (Prospect) prevents dangerous traffic congestion.

General procouplet views (4.0 per cent) included expressions such as: "Think it is working O.K.," "O.K. does the job well," "Its great," etc.

Other opinion showed liking for the couplet because of attractiveness, modernization, progress and etc., and comprised 5.5 per cent of the total.

As a counterpart of Question No. 5., Question No. 6 asked: "What do you DISLIKE about the 11th and Prospect One-Way Route?" Table 23 below presents the disposition of views on this question.

TABLE 23
TYPE OF RESPONSE TO QUESTION NUMBER 6.

<u>Type of Response</u>	<u>Number of Replies</u>
Negative (anticouplet) - - - - -	86
Positive (procouplet) - - - - -	28
Indifferent - - - - -	2
No response (blank) - - - - -	<u>64</u>
TOTAL	180

Despite the fact that this question was posed to receive negative opinion about the couplet, 28 or 15.5 per cent of the replies were "procouplet." The 64 no-response views, 35.5 per cent, could be construed as opinion not prejudiced against the couplet, thereby, leaving 86 views representative of 42.2 per cent as having dislike for the one-way system.

Table 24 below categorizes the anticouplet factors of the above negative response.

TABLE 24
ANTICOUPLET FACTORS ADVANCED BY RESPONDENTS

<u>Anticouplet Factor</u>	<u>Number of - Views</u>	<u>Per Cent</u>
Inconvenience and Lack of Facility - - -	53	39.9
Unsafe and hazardous - - - - -	55	41.3
General - - - - -	3	2.3
Other - - - - -	<u>22</u>	<u>16.5</u>
TOTAL	133	100.0

In contrast to 200 views which were advanced in favor of the couplet, as shown in Table 22, only 133 opinions were critical of the one-way routing. Many of the reasons presented were with merit and in a light of constructive criticism evoking improvements while not doing away with the one-way system.

The following is an abstract of views indicative of inconvenience and lack of facility afforded by the couplet: 1) no controlled access; 2) Prospect ends like a deadend at Montana Avenue; 3) congested intersections at Montana Avenue; 4) not always the shortest route to shopping center; 5) difficult to enter from side street; 6) no direct one-way routing to and from downtown after Montana Avenue; 7) congested at noon and 5 p.m.; 8) difficult to get on Prospect at 8 a.m.; 9) signal at 11th and Montana Avenues too short of duration coming onto 11th Avenue; 10) additional distance required to get to destination; 11) jog back to two-way traffic on Montana Avenue; 12) difficult to get to downtown from the eastside;

13) time consuming; 14) approaches from north on Prospect too steep.

From the standpoint of unsafe and hazardous conditions some of the following views were offered: 1) not enough one-way signs; 2) inexperienced motorists, not familiar with one-way system; 3) blind corner near Holiday Motel; 4) speeding, especially when children crossing; 5) speed limit not enforced; 6) hazardous large truck traffic; 7) slippery (in wintertime) downhill at Lamborn and Prospect; 8) not enough street lights at Lamborn; 9) parking allowed on 11th Avenue; 10) one-way signs too small; 11) not patrolled adequately; 12) no crosswalks; 13) dangerous approach where Prospect empties into Montana Avenue; 14) no stop lights for cross traffic at 8 a.m., noon, and 5 p.m.

Other comments critical of the couplet mentioned poor paving on 11th Avenue, narrowness of 11th Avenue as compared with Prospect Avenue, poor business due to one-way system, blight area near Prospect, noise, poor designation, etc.

Question No. 7 asked "Would you prefer that 11th Avenue be WIDENED into a two-way artery instead of its present one-way easterly routing?" A check off "Yes, because" or "No, because" response was invited. Table 25 below summarizes the results.

TABLE 25
NATURE OF RESPONSE TO QUESTION NUMBER 7

<u>Type of Response</u>	<u>Number of Replies</u>	<u>Per Cent</u>
YES (preferred widening of 11th Avenue for conversion to two-way artery)	34	18.9
NO (mostly preferred the couplet as is)	116	64.4
NO Reply (blank)	<u>30</u>	<u>16.7</u>
TOTAL	180	100.0

The predominating "no widening, no conversion to two-way" sentiment was typified by the following:

"No, easier flow of traffic and it is safer."

"No, because it would involve a lot of work and money which isn't necessary because the cars are running smoothly now."

"No, because it would increase the confusion of traffic in and about the shopping center."

"No, too expensive to be feasible, too much traffic would be confined in one artery."

"No, difficult enough to cross."

"No, it would be a step backward."

"No, it would inconvenience the property owners and the trees would have to be removed."

"No, there is too much traffic and too much activity in the small area involved so that it would be difficult to get across the streams of traffic."

"No, it would disrupt adjacent properties due to more right of way being needed."

"No I think it is satisfactory as is. Let's conserve our money."

"No, it would be a regressive step - Helena needs more, not less one-way streets."

"No, getting out of Capital Hill shopping center would be murder."

"No, easy access to and from Interstate."

"No, I like the idea of east and west traffic being separated."

"No, it would ruin safety factors inherent in one-way traffic."

"No, traffic moves freely and faster on these one-way streets."

"No, the traffic would be more congested."

"No, it is serving its purpose and why spend money to change it."

"No, once you adapt to one-way streets they become habit. No widening."

"No, it is easier and less hazardous to cross traffic or merge with cars."

Typical pro 11th Avenue widening and conversion to two-way operation reasons revolved around the aforesaid trepidations of unsafe conditions, supposed present inconvenience, lack of business, etc. Some of these are the following:

"Yes, more convenient for some reason I like to come back the same route I used to go somewhere."

"Yes, saves driving two blocks."

"It would be more convenient for us especially the business establishments would be easier to approach."

"Yes, faster way to town and more direct."

"Yes, it is the main, straight artery to downtown Helena."

"Yes, less dangerous."

"Yes, less corner confusion and hazard."

"Yes, if land prices weren't out of reason."

"Yes, I think it would be more convenient. Prospect is a short one-way ending abruptly at Montana Avenue; if Prospect continued on further into town it would be different."

"Yes, children going to Ray Bjork school and people coming or going from downtown direction are not considered when capitol traffic is coming or going."

"Yes, too confusing for people not familiar with the area."

"Yes, this would probably be the best answer."

"Yes, it is progress and necessity."

"Yes, 11th must be widened for two-way traffic eventually, downtown to city limits."

"Yes, it is safe enough now."

"Yes, better yet, make it into a four lane, but this is impossible."

Question No. 8. was the concluding question of the survey and it invited the respondents to make any additional comments with regard to the 11th and Prospect one-way route. Many of the respondents did answer and provided appropriate and interesting comments--some of which are as follows:

"A perfect solution--it is only too bad that the route could not be extended to downtown. Why spend more money and achieve at best a solution no better than presently exists. The intersection of 11th and Montana is a mess now, imagine what it would be with 4 lanes. The right of way required to widen to 4 lanes would take out almost 5 blocks of houses, businesses, the Deaconess School, a very large sum would be involved, say \$500,000 for land only. Incoming traffic (westbound) would be at the mercy of left turn cars into the shopping center, etc., etc."

"Prospect should be extended westward to Benton and connect with Hauser or Stuart to make another through street to take the load off Lyndale and Euclid."

"Occasionally, someone will travel the wrong way, however, these are people from out of town or state. Larger, more prominent signs would be in order."

"The people of Helena should be informed on how to drive on a street or highway of this type. The driving exam should be modified to illustrate this. Then there would be no problem."

" I do not like to be in the left lane on 11th going over that small rise by the Deaconess school. I think tourists at the Holiday Inn are confused somewhat and find themselves going the wrong way on a one-way street trying to come to downtown Helena or the capitol district."

"I walk a great deal and it is still possible to cross 11th and Prospect streets. If they were made into 2 way arteries it would be necessary to put in 4 way lights to enable the pedestrians to cross."

"Consideration might be given to One-Way route on 11th from Last Chance Gulch eastbound and One-Way route on 6th Avenue westbound during the peak periods of traffic each day, for example, 8:00 a.m. to 9:00 a.m., 12:00 to 1:30 noon and at 5:00 to 6:00 p.m. to handle east west peak periods. This is done effectively in other cities."

"A two-way street would require an elaborate set of timed signals to handle the present traffic flow. It is inconceivable that a two-way street could ever be made as safe as what is present with the exiting and entering traffic that is now being handled with the split traffic pattern. Just check the traffic accident records."

"There is considerable criticism about these one-way streets, mostly from merchants who believe they are suffering economic loss or motorists who have no experience in one-way traffic arterials, in either case, the motivation lacks sincerity."

"I would like to see 6th Avenue widened and made one-way going into downtown, and Broadway one-way coming out of downtown toward St. Peters new hospital."

"It is my feeling the one-way couplet is the only way to move traffic and I cannot see how it can hurt business if a person tries to give good services, customers will come."

"Put the money they want to spend into changing 11th Avenue to improve some of the other streets in Helena."

FOOTNOTES

1. "Blair Recounts Helena History of Earlier Day." The Helena Independent, September 27, 1916.
2. "City of Helena Fifty Years Old," The Montana Record Herald, November 1, 1914.
3. The Helena Independent, September 27, 1916, op. cit.
4. Merrill G. Burlingame and K. Ross Toole, A History of Montana, V.II (New York: Lewis Historical Publishing Company, 1957), pp. 202-203.
5. The Montana Record Herald, July 17, 1922, op.cit.
6. "Reasons Why Helena Should be Made the Permanent Capitol of the State," An Address to the People of Montana (Helena: H. S. Thurber and Company, December 31, 1897), p. 10.
7. Burlingame, op.cit. p. 205
8. "Get Acquainted with Helena," The Helena Independent, January 17, 1918.
9. Burlingame, op. cit.
10. Ibid., p. 206
11. W. C. Williams, A Study of One-Way Street Routings, Oregon State Highway Commission, Technical Report 59-4, April, 1959, p. 9.
12. Theodore M. Matson et al., Traffic Engineering, (New York: McGraw-Hill Book Company, Inc., 1955), p. 262
13. Ibid., p. 263
14. John and Ward Hawkins, "One-way to Traffic Sanity," Freedom of the American Road, Ford Motor Company, 1956, p. 51
15. Kelly, op. cit. p. 1
16. Ibid, p. 3
17. Montana State Highway Commission, Urban Transportation Survey of Great Falls, Montana, Vol. IV, September 1965, p. 12

18. Williams, op. cit. p 16
19. Ibid
20. Williams Phelps Eno, Simplification of Highway Traffic, Eno Foundation for Highway Traffic Regulation, Inc. 1929, p. 52.
21. Matson, et al., op. cit. p. 260

APPENDIX SECTION

5. What do you LIKE about the 11th and Prospect One-Way Route?

(1).

(2).

6. What do you DISLIKE about the 11th and Prospect One-Way Route?

(1).

(2).

7. Would you prefer that 11th Avenue be WIDENED into a Two-Way artery instead of its present One-Way easterly routing?

.... Yes, Because:

.... No, Because:

8. What other comments would you care to make with regard to the 11th and Prospect One-Way Route?

.....

.....



CARROLL COLLEGE
Helena, Montana 59601

PLACE
STAMP
HERE

ECONOMIC RESEARCH DEPARTMENT
CARROLL COLLEGE
HELENA, MONTANA 59601

Exhibit 10 Study Area: Resident Survey Questionnaire

No.

SECOND FOLD INWARD



Dear Resident:

The Economic Research Department of Carroll College is conducting a study of the ECONOMIC IMPACT AND ANALYSIS of the 11th and Prospect One-Way Route which is in your neighborhood and vicinity.

This research project is being carried out for the Montana State Highway Commission in cooperation with the Bureau of Public Roads of the U.S. Department of Commerce.

In evaluating the many important socioeconomic factors relating to this major Helena traffic artery and its use, we would appreciate your kind help in answering any or all of the pertinent questions below. Upon completion, fold the questionnaire inward as indicated on the left margin. Peel off the paper on the adhesive tab, flap the tab over and seal the questionnaire. Mail it back at your earliest convenience with the postage already supplied.

Thank you for your cooperation.

Economic Research Department
CARROLL COLLEGE

(Please **do not** include your name or the name of other persons in this questionnaire)

1. What is your occupation or profession?

Answer:

2. What is your (husband's or wife's) occupation or profession?

Answer:

3. How far do you live from the 11th and Prospect One-Way Route?

.... Block(s) north of Prospect, or

.... Block(s) south of 11th

4. For what purposes do you and/or members of your family use the 11th and Prospect One-Way Route?

SHOPPING (check)

(1.) Capital Hill Shopping Center

.... Several Times Daily

.... Several Times Weekly

.... Occasionally

(2.) Lundy Shopping Center

.... Several Times Daily

.... Several Times Weekly

.... Occasionally

(3.) Downtown Helena

.... Several Times Daily

.... Several Times Weekly

.... Occasionally

(4.) Other (Specify)

.... Several Times Daily

.... Several Times Weekly

.... Occasionally

TO AND FROM WORK (Check)

.... You Yourself

.... Other Members of Family

.... (Husband or Wife)

.... Car Pool

VISIT FRIENDS OR RELATIVES (Check)

.... Daily

.... Several Times a Week

.... Several Times a Month

.... Occasionally

OTHER PURPOSES (Specify and Check)

(1.)

.... Daily

.... Several Times a Week

.... Several Times a Month

.... Occasionally

(2.)

.... Daily

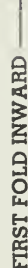
.... Several Times a Week

.... Several Times a Month

.... Occasionally

(OVER, PLEASE)

FIRST FOLD INWARD



NO. _____

ECONOMIC SURVEY QUESTIONNAIRE

: _____

<u>TYPE OF ENTERPRISE</u>	NAME OF BUSINESS: _____
_____ DRUG STORE	ADDRESS: _____ BLOCK NO. _____ LOT NO. _____
_____ SERVICE STATION	_____ PROPRIETORSHIP _____ PARTNERSHIP _____ CORPORATION
_____ GAS _____ REPAIR	_____ OWN PROPERTY _____ MORTGAGE _____ LEASE _____ FRANCHISE
_____ FOOD STORE	PREVIOUS LOCATION: _____ WHEN: _____
_____ TYPE: _____	TOTAL LAND: _____ TOTAL FLOOR SPACE: _____ STORAGE: _____
_____ MOTEL	AVAIL. PARKING AREA: _____ VACANT AREA: _____
_____ WITH CAFE	MARKET VALUE OF PROPERTY: _____ ASSESSED VALUE: _____
_____ CAFETERIA	ASSESSED VALUE OF LAND: _____ ASSESSED VALUE BLDG: _____
_____ DEPARTMENT STORE	FRONT FOOTING PRICE: _____ VALUE FIXT? & EQUIP: _____
_____ PROFESSIONAL SERV.	NUMBER OF EMPLOYEES: _____ FULL TIME: _____ PART TIME: _____
_____ TYPE: _____	APPROX. MONTHLY PAYROLL _____ \$0-1,000 _____ \$1,000-2,500
_____ SERVICE SHOPS	_____ \$2,500-5,000 _____ \$5,000-10,000 _____ OVER \$10,000
_____ TYPE: _____	APPROX. MONTHLY GROSS SALES (NEAREST \$1,000): JAN. _____
_____ APPLIANCE STORES	FEB. _____ MAR. _____ APR. _____ MAY _____ JUNE _____ JULY _____
_____ APPAREL STORES	AUG. _____ SEPT. _____ OCT. _____ NOV. _____ DEC. _____
_____ TYPE: _____	AV. DAILY CUSTOMERS: MON. _____ TUES. _____ WED. _____ THUR. _____
_____ CAR DEALERS	FRI. _____ SAT. _____ SUN. _____ XMAS WEEK _____ EASTER WEEK _____
_____ USED _____ NEW	BETWEEN HOURS: 9-12: _____ 12-3: _____ 3-6: _____ 6-9: _____
_____ RECREATION FAC.	RECENT IMPROV. \$ _____ TYPE: DECORATIONS _____
_____ TYPE: _____	EQUIP. & FIXTURES _____ NEW LINES & SERVICES _____
_____ OTHER ENTERPRISES	ADDED BLDG. _____ OTHER FACILITIES _____ (TYPE: _____)
_____ TYPE: _____	1964 vol. _____ %DECLINE _____ NO CHANGE _____ %IMPROV.
	1965 vol. _____ %DECLINE _____ NO CHANGE _____ %IMPROV.
	1966 vol. _____ %DECLINE _____ NO CHANGE _____ %IMPROV.
	1967 vol. _____ %DECLINE _____ NO CHANGE _____ %IMPROV.

ADDITIONAL QUESTIONS:

- What were your reasons for locating in the couplet area?
 - _____
 - _____
 - _____
- Would you favor 11th ave. and Prospect becoming two-way arteries?
 _____ YES _____ NO (for the following reasons)
 - _____
 - _____
 - _____
- What highway improvements would you favor for your present location?
 - _____
 - _____
 - _____
- What property improvements and developments would you like to see in this location?
 - _____
 - _____
 - _____

Exhibit 11: Economic Survey Questionnaire

